Service
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FHP PDP Repair Manual

FPF32C106128UA-51, -52, -62 (32" H1)
FPF32C106128UA-72 (32" H2)
FPF37C128128UA-72 (37" H2)
FPF37C128128UB-72 (37" A1)
FPF42C128128UB-54 (42" H1)
FPF42C128128UB-72 (42" H2)
FPF42C128128UC-52 (42" A1)
FPF42C128128UD-52 (42" A2)
FPF42C128128UE-52 (42" A3)

ServiceManual

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PHILIPS

1. Technical Specifications

Index of this chapter:

1.1 Specifications
1.2 Serial Numbers
1.3 Chassis overview

1.1 Specifications

1.1.1 32" H1

No	Item	Spec. FPF32C106128UA-51,-52,-62
1	Pixel	Information not available
2	Number of Cells	
3	Pixel Pitch	
4	Cell Pitch	
5	Display size	
6	Screen size	
7	Screen aspect	
8	Dimensions	
9	Weight	
10	H sync, V sync, data	

1.1.2 32" H2

No	Item	Spec. FPF32C106128UA-72
1	Pixel	Information not available
2	Number of Cells	
3	Pixel Pitch	
4	Cell Pitch	
5	Display size	
6	Screen size	
7	Screen aspect	
8	Dimensions	
9	Weight	
10	H sync, V sync, data	

1.1.3 37" H2

No	Item	Spec. FPF37C128128UA-72
1	Pixel	852 (H) x 480(V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	2556 (H) x 480 (V)
3	Pixel Pitch	1.08 mm (H) x 1.08 mm (V)
4	Cell Pitch	0.36 mm (H) x 1.08 mm (V)
5	Display size	920.16 (H) x 518.40 mm (V)
6	Screen size	
7	Screen aspect	
8	Dimensions	
9	Weight	
10	H sync, V sync, data	

1.1.4 37" A1

No	Item	Spec. FPF37C128128UB-72
1	Pixel	1024 (H) x 1024 (V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	3072 (H) x 1024 (V)
3	Pixel Pitch	0.795 mm (H) x 0.435 mm (V)
4	Cell Pitch	0.265 mm (H) x 0.435 mm (V)
5	Display size	814.08 (H) x 454.44 mm (V)
6	Screen size	Diagonal 37"
7	Screen aspect	16:9
8	Dimensions	903 (W) x 498 (H) x 66 (D) mm
9	Weight	About 13.5 kg
10	H sync, V sync, data	50 kHz (H), 50/60 Hz (V), LVDS

1.1.5 42" H1

No	Item	Spec. FPF42C128128UB-54
1	Pixel	Information not available
2	Number of Cells	
3	Pixel Pitch	
4	Cell Pitch	
5	Display size	
6	Screen size	
7	Screen aspect	
8	Dimensions	
9	Weight	
10	H sync, V sync, data	

1.1.6 42" H2

No	Item	Spec. FPF42C128128UB-72
1	Pixel	Information not available
2	Number of Cells	
3	Pixel Pitch	
4	Cell Pitch	
5	Display size	
6	Screen size	
7	Screen aspect	
8	Dimensions	
9	Weight	
10	H sync, V sync, data	

1.1.7 42" A1

No	Item	Spec. FPF42C128128UC-52
1	Pixel	1024 (H) x 1024 (V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	3072 (H) x 1024 (V)
3	Pixel Pitch	0.90 mm (H) x 0.51 mm (V)
4	Cell Pitch	0.30 mm (H) x 0.51 mm (V)
5	Display size	921.60 (H) x 522.24 mm (V)
6	Screen size	Diagonal 42"
7	Screen aspect	16:9
8	Dimensions	994 (W) x 585 (H) x 66 (D) mm
9	Weight	About 16 kg
10	H sync, V sync, data	50 kHz (H), 50/60 Hz (V), LVDS

1.1.8 42" A2

No	Item	Spec. FPF42C128128UD-52
1	Pixel	1024 (H) x 1024 (V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	3072 (H) x 1024 (V)
3	Pixel Pitch	0.90 mm (H) x 0.51 mm (V)
4	Cell Pitch	0.30 mm (H) x 0.51 mm (V)
5	Display size	921.60 (H) x 522.24 mm (V)
6	Screen size	Diagonal 42"
7	Screen aspect	16:9
8	Dimensions	994 (W) x 587 (H) x 66 (D) mm

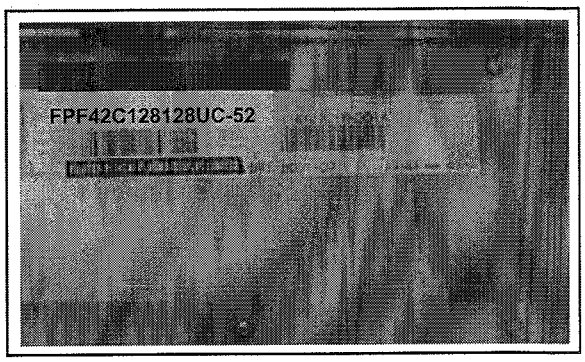
No	Item	Spec. FPF42C128128UD-52
9	Weight	About 16 kg
10	H sync, V sync, data	50kHz (H), 50/60/70Hz (V), LVDS

1.1.9 42" A3

No	Item	Spec. FPF42C128128UE-52
1	Pixel	1024 (H) x 1024 (V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	3072 (H) x 1024 (V)
3	Pixel Pitch	0.90 mm (H) x 0.51 mm (V)
4	Cell Pitch	0.30 mm (H) x 0.51 mm (V)
5	Display size	921.60 (H) x 522.24 mm (V)
6	Screen size	Diagonal 42"
7	Screen aspect	16:9
8	Dimensions	994 (W) x 587 (H) x 66 (D) mm
9	Weight	About 16 kg
10	H sync, V sync, data	50 kHz (H), 50/60 Hz (V), LVDS

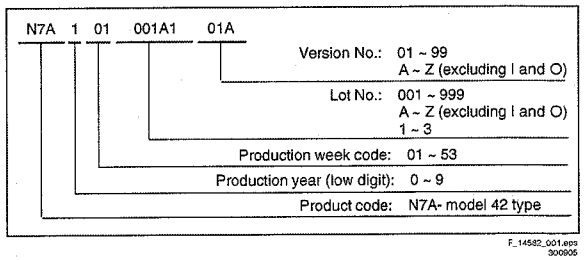
1.2 Serial Numbers

Check the serial ID number of the product requested for repair, before starting the problem analysis and repair.



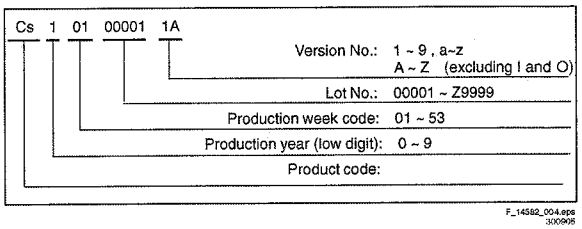
F_14582_002.eps
300905

Figure 1-1 Module product number


N7A 1 01 001A1 01A
Version No.: 01 ~ 99
A ~ Z (excluding I and O)
Lot No.: 001 ~ 999
A ~ Z (excluding I and O)
1 ~ 3
Production week code: 01 ~ 53
Production year (low digit): 0 ~ 9
Product code: N7A- model 42 type

F_14582_001.eps
300905

Figure 1-2 Module serial number


Cs 1 01 00001 1A
Version No.: 1 ~ 9 , a~z
A ~ Z (excluding I and O)
Lot No.: 00001 ~ Z9999
Production week code: 01 ~ 53
Production year (low digit): 0 ~ 9
Product code:

F_14582_004.eps
300905

Figure 1-3 Panel serial number

Note: The module serial number and the serial number of the completed chassis (product requested for repair) are usually the same when the product is brought in for repair the first time.

1.3 Chassis overview

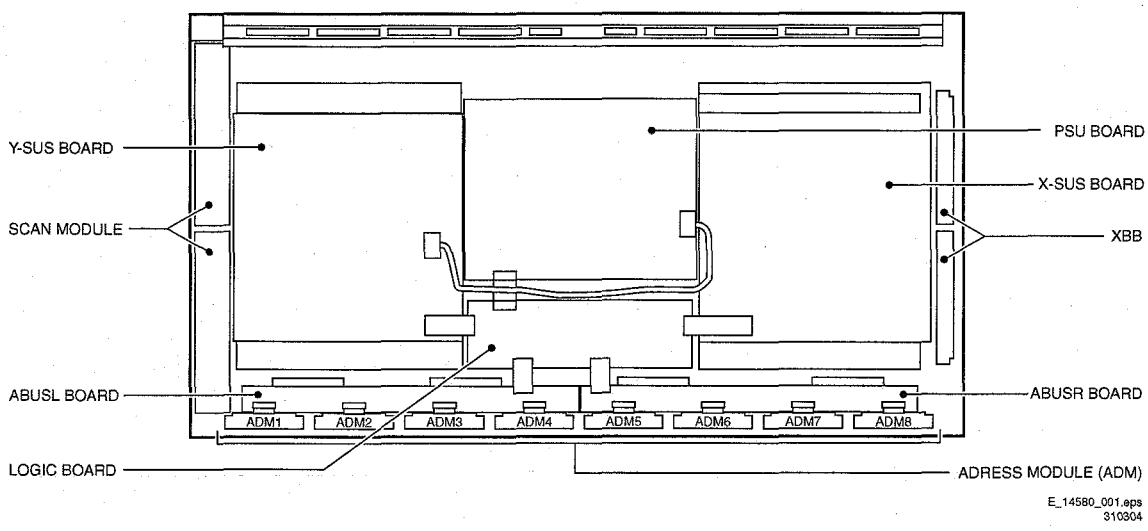


Figure 1-4 PWB locations

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions
2.2 Warnings
2.3 Notes

2.1 Safety Instructions

It is not allowed to operate the FTV-set without glass plate. One function of this glass plate is to absorb Infrared Radiation. Without this glass plate the level of Infrared Radiation produced by the plasma display could damage your eyes.

1. Safety regulations require that during a repair:
   - the set should be connected to the mains via an isolating transformer (in this particular case a transformer of ≥ 800 VA).
   - safety components, indicated by the symbol ⚠, should be replaced by components identical to the original ones.
2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.
   - Note: The wire trees should be routed correctly and fixed with the mounted cable clamps.
   - The insulation of the mains lead should be checked for external damage.
   - The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets that have a mains isolated power supply). This check can be done as follows:
     - unplug the mains cord and connect a wire between the two pins of the mains plug;
     - set the mains switch to the on position (keep the mains cord unplugged!);
     - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ;
     - switch off the TV and remove the wire between the two pins of the mains plug.
   - The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

2.2 Warnings

1. ESD

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

1. Available ESD protection equipment:
   - complete kit ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
   - wristband tester 4822 344 13999
2. Never replace modules or other components while the unit is switched on.
3. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

1. A glass plate is positioned before the plasma display. This glass plate can be cleaned with a slightly humid cloth. If due to circumstances there is some dirt between the glass plate and the plasma display panel it is recommended to do some maintenance by a qualified service employee only.
2. Never disconnect the power display cable when the set is operating
3. With DST no failures (error-codes) can be red, when the set is in Service-mode.
4. If DST reacts with "error 2", there is no communication between the TV and the DST. Note that the IR-transmitter LED is positioned at the right side of IR-receiver eye of the E-box. Take into account that receiver-LED on DST is positioned not in the middle but at the left side. Point corresponding LEDs to each other. In case the amount of Infrared produced by the screen pollutes the communication, the set can be set in Stand-by-mode. Then still the error-messages can be retrieved.

2.3.1 Notes on Safe Handling of the Plasma Display

Notes to Follow During Service

- The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.
- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the main POWER switch and disconnect the power cable from the power source of the display (jig or the display itself) during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power supply PC board and the SUS PC board in which high voltages are applied, start servicing at least 2 minutes after the main power has been turned off.
- While the main power is on, do not touch any parts or circuits other than the ones specified. The high voltage power supply block within the PDP module has a floating ground. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.
- When installing the PDP module in, and removing it from the packing carton, be sure to have at least two persons perform the work white being careful to ensure that the flexible printed-circuit cable of the PDP module does not get caught by the packing carton.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.
- When handling the circuit PC board, be sure to remove static electricity from your body before handling the circuit PC board.
- Be sure to handle the circuit PC board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not stack the circuit PC boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.
- Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are fixed in position with the wire clamps so that the wires do not move, thereby ensuring that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.

- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup

3. Directions for Use

Not applicable.

4. Mechanical Instructions

Index of this chapter:
4.1 Board Swap Instructions

Notes:
- Figures below can deviate from the actual situation, due to different set executions.
- For more detailed instructions regarding the (dis)assembly of the TV chassis that hold these PDPs, read the corresponding TV Service Manual.

4.1 Board Swap Instructions

4.1.1 General

Before dismounting panels read notes below!

Caution when removing circuit board!
When removing the circuit board after the main power is turned on/off, wait for at least one minute before starting to remove the circuit board.
If the circuit board removal is started immediately after turning off the main power, it can result in electric shock or damage to the circuit due to residual electric charge.

Caution on handling the FPC connector!
To release the black lock lever of the connector, flip it up gently in the middle with the nail of the thumb or forefinger, from the side with the cable. Never pinch the lock lever with fingers or tools.
Doing so might damage the lock lever.

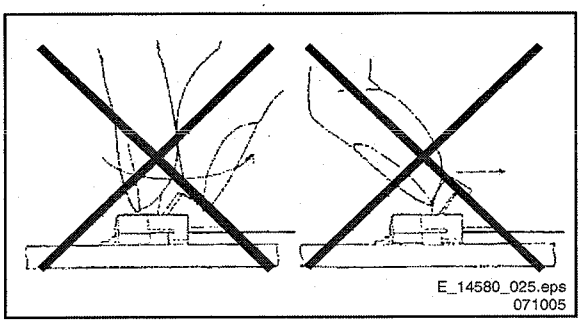


Figure 4-1 Handling the FPC connector

4.1.2 X-SUS Circuit Board

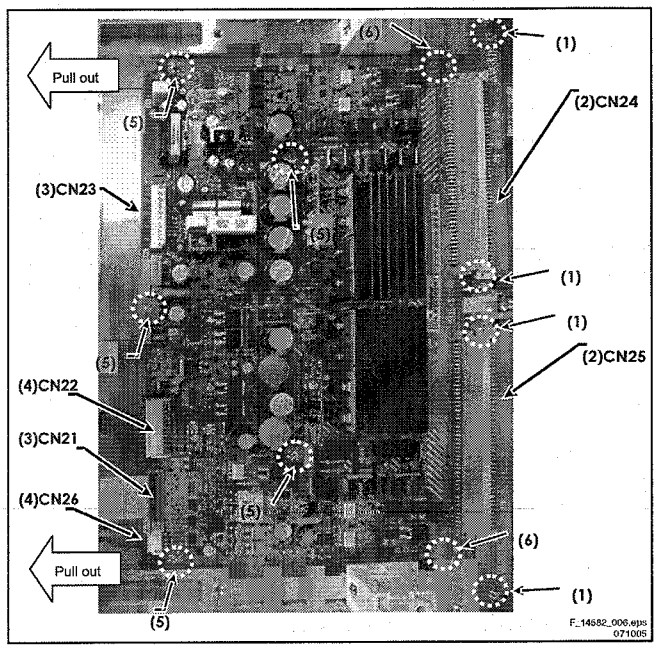


Figure 4-2 X-SUS board removal (1)

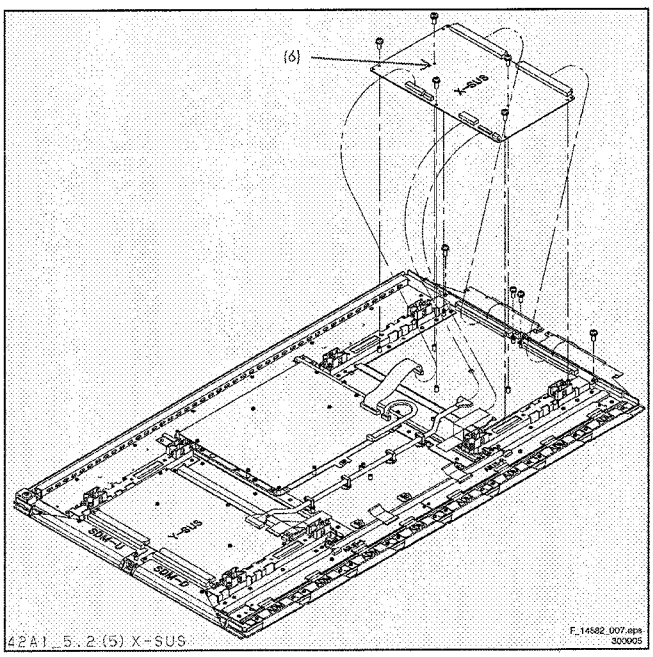


Figure 4-3 X-SUS board removal (2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.
1. Remove the fixing screws (M3 X 8).
2. Release the lock of the FPC connector (CN21) and disconnect the signal cable.

3. Disconnect the connectors CN22, CN23 and CN26.
4. Pull out the XSUS board horizontally and disconnect the connectors (CN24, CN25).
5. Remove the X-SUS board.

Make sure that you do not touch the heat sink when removing the Y-SUS board.

4.1.3 Y-SUS Circuit Board

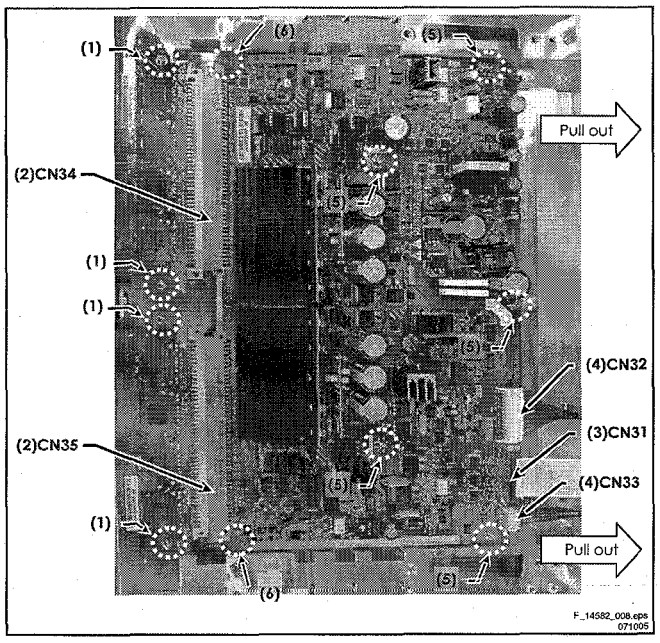


Figure 4-4 Y-SUS board removal (1)

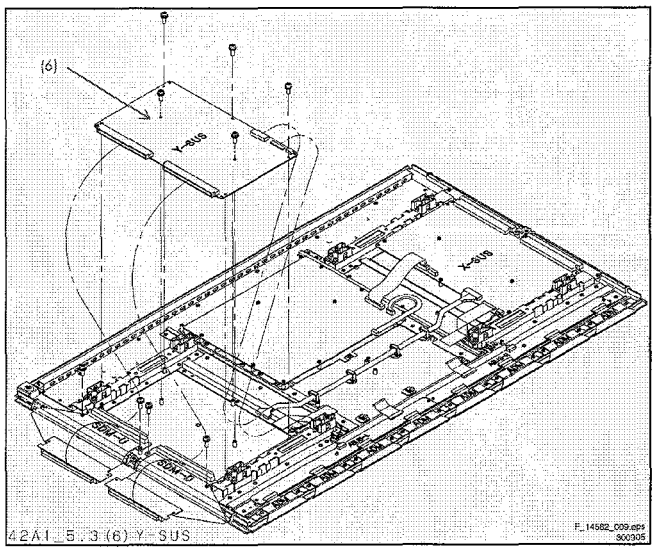


Figure 4-5 YSUS board removal (2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Remove the fixing screws (M3 X 8).
2. Release the lock of the FPC connector CN31 and disconnect the signal cable.
3. Disconnect the connectors CN32, CN33.
4. Pull out the YSUS board horizontally and disconnect the connectors (CN34, CN35).
5. Remove the Y-SUS board.

Make sure that you do not touch the heat sink when removing the Y-SUS board.

4.1.4 ABUS-L Circuit Board

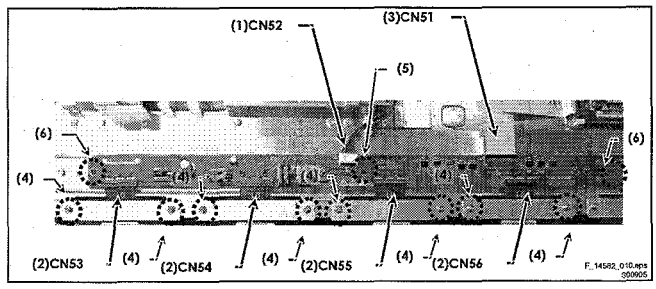


Figure 4-6 ABUS-L board removal (1)

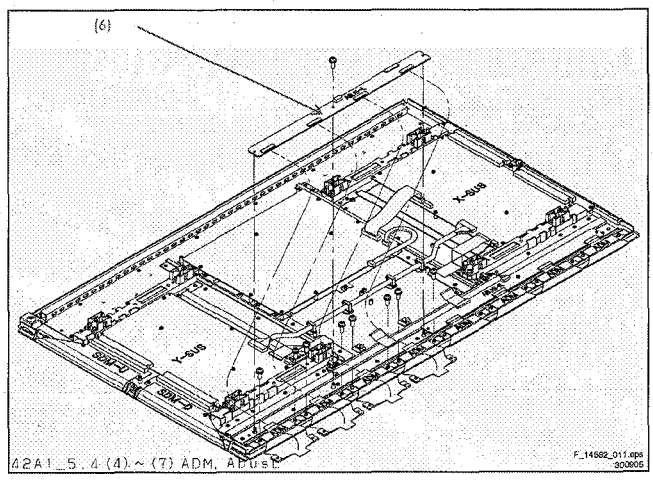


Figure 4-7 ABUS-L board removal (2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Disconnect the connector CN52 from the ABUS-L board.
2. Release the lock of the FPC connectors CN53, CN54, CN55 and CN56 and remove the ADM flexible board.
3. Release the lock of the FPC connector CN51 and disconnect the signal cable.
4. Remove the screws (M3X8) fixing the ADM.
5. Remove the screws (M3x8) fixing the ABUS-L board.
6. Remove the ABUS-L board.
7. When installing the ABUS L-board, put the board in such a position that it is locked by the tabs before fixing it with the screws.

4.1.5 ABUS-R Circuit Board

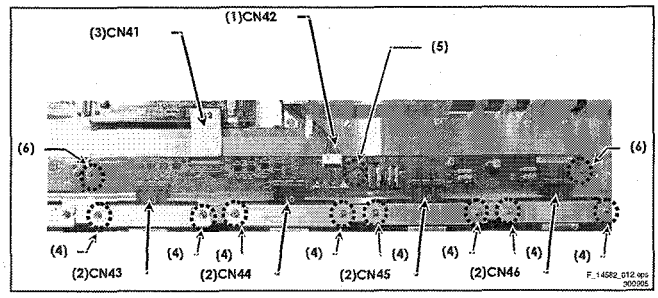


Figure 4-8 ABUS-R board removal (1)

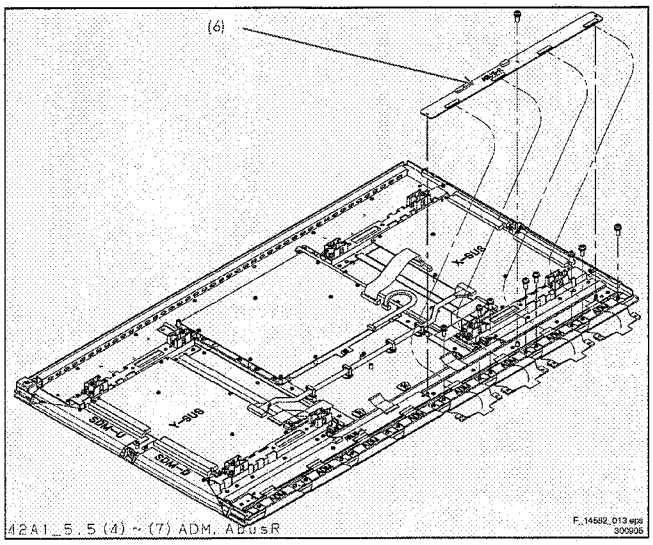


Figure 4-9 ABUS-R board removal (2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Disconnect the connector CN42 on the ABUS-R board.
2. Release the lock of the FPC connectors CN43, CN44, CN45, CN46 and disconnect the ADM flexible board.
3. Release the lock of the FPC connector CN41 and disconnect the signal cable.
4. Remove the screws (M3X8) fixing the ADM.
5. Remove the screws (M3X8) fixing the ABUS-R board.
6. Remove the ABUS-R board.
7. When installing the ABUS-R board, put the board in such a position that it is locked by the tabs before fixing it with the screws.

4.1.6 Logic Board

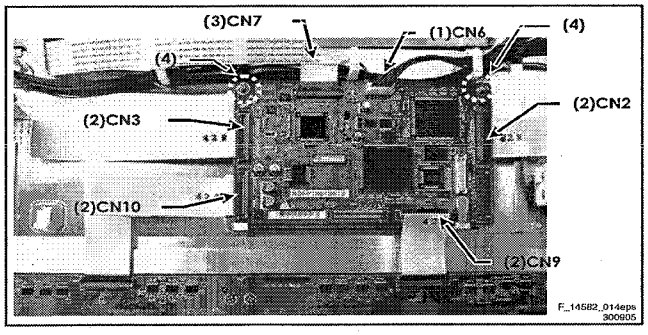


Figure 4-10 Logic board removal (1)

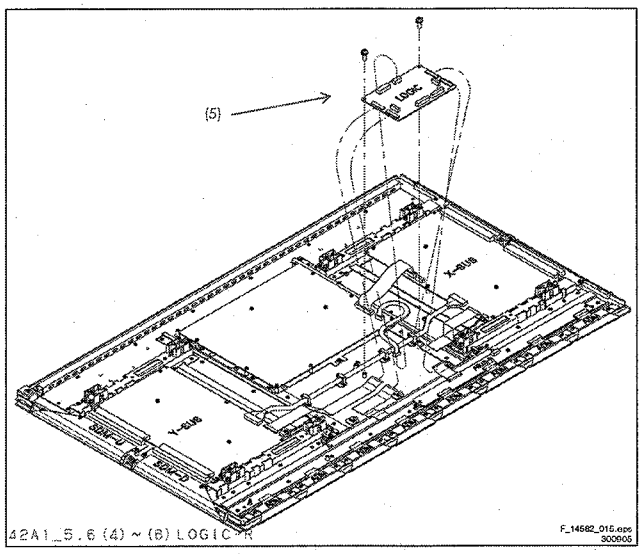


Figure 4-11 Logic board removal (2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Disconnect the EH connector CN6.
2. Release the lock of the FPC connectors CN2, CN3, CN4, CN5 and disconnect the signal cable.
3. Slide the lock of the FPC connector CN7 toward the PSU board side, then gently push it down toward the front and remove the PSU signal cable.
4. Remove the screws (M3 X 8) fixing the Logic board.
5. Remove the Logic board.
6. When installing the Logic board, put the board in such a position that it is locked by the tabs before fixing it with the screws.

4.1.7 PSU Board

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Release the lock of the large cable clamp.
2. Disconnect the X-SUS board connector CN23.
3. Disconnect the Y-SUS board connector CN33.
4. Disconnect the ABUSR board connector CN42.
5. Disconnect the ABUSL board connector CN52.
6. Remove the wires from the small cable clamp.
7. Disconnect the Logic board connector CN6.
8. Disconnect the PSU signal cable from the PSU board with connector CN69.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Repair Tools
5.2 Process Flow
5.3 Repair Instructions
5.4 Defect Description Form

5.1 Repair Tools

To be able to repair the Plasma Display Panels on board level, the following repair tools are available:

- Special LVDS cable: 9965 000 23434.
- Foam buffers: 3122 785 90581.

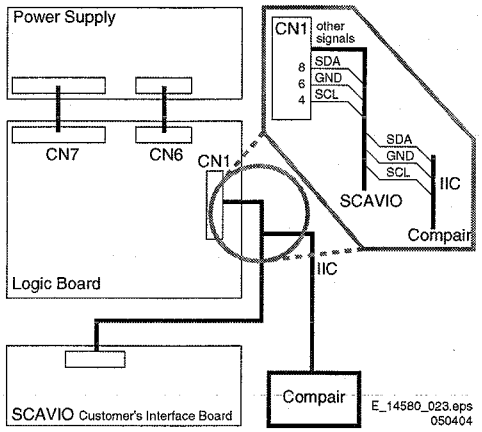


Figure 5-1 Extension cable kit ALiS PDP

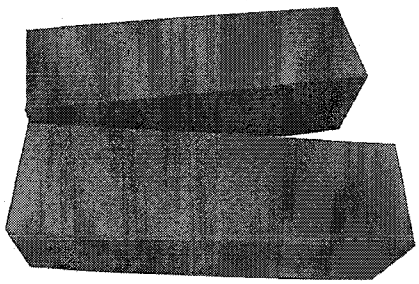


Figure 5-2 Foam buffers for FTV

5.2 Process Flow

The selected workshop receives the defect TV set and investigates the PDP. Two possible solutions follow:

5.2.1 Advanced PDP Exchange (Actual Way-of-working)

In case of:
- Glass broken,
- Flex foil damaged,
- Y-COM IC on flex foil is damaged, or
- NVM on logic board defect: no communication with ComPair

the procedure for repair is as follows:
A new PDP will be ordered at EuroService. They issue an RMA number and ship a refurbished PDP from its swap pool in a flight case to the workshop. After receipt, the workshop sends the defective PDP, accompanied by a completely filled in Defect Description Form (see figure "Defect Description Form (DDF)"), in this flight case to EuroService. EuroService makes sure the defect PDP is repaired and afterwards added to its swap pool. The workshop makes the TV set complete by building in the refurbished PDP. Afterwards the TV set is returned to the customer.

5.2.2 Customized Repair

If the defect is not mentioned in 5.2.1, the workshop orders the necessary spare parts, being boards, at EuroService. After receipt the workshop swaps the concerning board and makes the TV set complete by building in the PDP. Afterwards the TV set is returned to the customer.

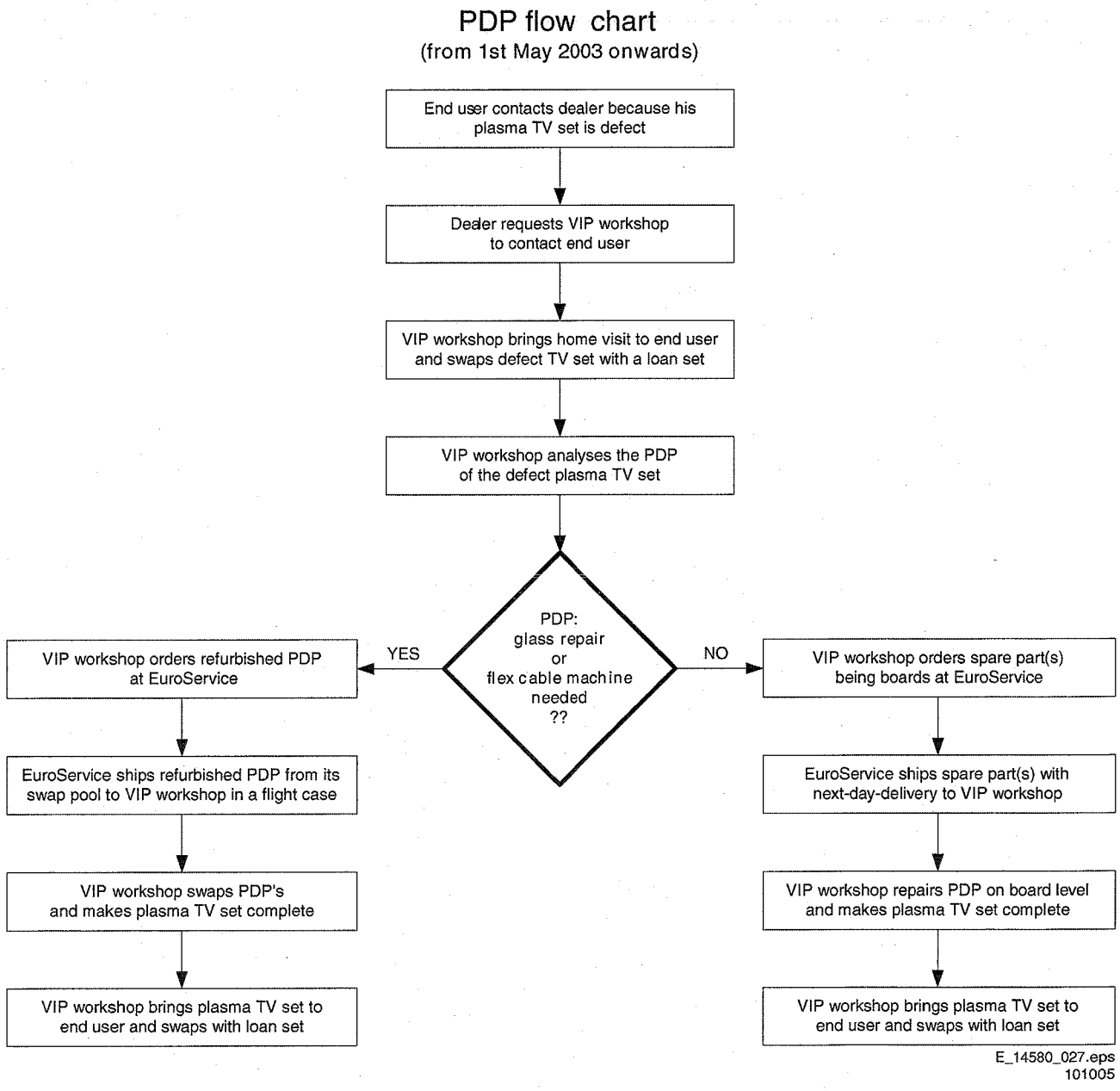

PDP flow chart
(from 1st May 2003 onwards)
End user contacts dealer because his plasma TV set is defect
Dealer requests VIP workshop to contact end user
VIP workshop brings home visit to end user and swaps defect TV set with a loan set
VIP workshop analyses the PDP of the defect plasma TV set
PDP: glass repair or flex cable machine needed ??
YES
NO
VIP workshop orders refurbished PDP at EuroService
EuroService ships refurbished PDP from its swap pool to VIP workshop in a flight case
VIP workshop swaps PDP's and makes plasma TV set complete
VIP workshop brings plasma TV set to end user and swaps with loan set
VIP workshop orders spare part(s) being boards at EuroService
EuroService ships spare part(s) with next-day-delivery to VIP workshop
VIP workshop repairs PDP on board level and makes plasma TV set complete
VIP workshop brings plasma TV set to end user and swaps with loan set
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Figure 5-3 PDP flow chart

5.3 Repair Instructions

5.3.1 General

In case of:
- a broken glass panel,
- a defective flex foil, or
- a defective Y-COM IC on the flex foil

the PDPs need to be send back via the central repair procedure of EuroService.

In other cases the Plasma Display Panels must be repaired on board level.

5.3.2 32" H1 ALiS Plasma Display Panel

These Plasma Display Panels are used in FM23 sets with production code AG00 up to and including AG05.

The involved Plasma Display Panels are:

Display type	Service code number	Production code
FPF32C106128UA-51	9322 172 11682	
FPF32C106128UA-52	9322 178 04682	
FPF32C106128UA-62	9322 190 61682	From AG06 0242 onwards

The available modules for the Plasma Display Panel FPF32C106128UA-51 and -52 are:

Module description	Factory code number	Service code number
X-SUS board	FPF17R-XSS5002	9965 000 17432
Y-SUS board	FPF17R-YSS5003	9965 000 17433
Logic board	FPF17R-LGC5012	9965 000 17435
ABUS Right	FPF17R-ABR5005	9965 000 17436
ABUS Left	FPF17R-ABL5004	9965 000 17437
Signal Cable (Logic - ABUS,SUS)	FPF17R-CBL2001	9965 000 17438
Signal Cable (XSUS-YSUS)	FPF17R-CBL1001	9965 000 17439

The available modules for the Plasma Display Panel FPF32C106128UA-62 are:

Module description	Factory code number	Service code number
X-SUS board	FPF17R-XSS5010	9965 000 17440
Y-SUS board	FPF17R-YSS5011	9965 000 17441
Logic board	FPF17R-LGC5013	9965 000 17442 *1
ABUS Right	FPF17R-ABR5005	9965 000 17436
ABUS Left	FPF17R-ABL5004	9965 000 17437
Signal Cable (Logic - ABUS,SUS)	FPF17R-CBL2001	9965 000 17438
Signal Cable (XSUS-YSUS)	FPF17R-CBL1001	9965 000 17439

5.3.3 32" H2 ALiS Plasma Display Panel

These Plasma Display Panels are used in FM23 sets with production code:
- AG07 and higher for the sets 32FD9954/17S and 32FD9954/69S
- AG08 and higher for the sets 32FD994/69S
- AG09 and higher for the sets 32FD9944/01S

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF32C106128UB-72	932219411682	

The available modules for this Plasma Display Panel are:

Module description	Factory code number	Service code number
X-SUS board	FPF17R-XSS5016	9965 000 22709
Y-SUS board	FPF17R-YSS5017	9965 000 22710
Logic board	FPF17R-LGC5018	9965 000 22711 *1
ABUS Right	FPF17R-ABR5015	9965 000 22713
ABUS Left	FPF17R-ABL5014	9965 000 22712
Signal Cable (Logic - ABUS,SUS)	FPF17R-CBL2001	9965 000 17438
Signal Cable (XSUS-YSUS)	FPF17R-CBL1001	9965 000 17439

5.3.4 37" H2 ALiS Plasma Display Panel

These Plasma Display Panels are used in FM33 sets with production code AG00 and onwards.

The involved Plasma Display Panels are:

Display type	Service code number	Production code
FPF37C128128UA-72	9322 194 09682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FPF18R-XSS5007	9965 000 23342
Y-SUS board	FPF18R-YSS5008	9965 000 23343
Logic board	FPF18R-LGC5009	9965 000 23344 *1
ABUS Right	FPF18R-ABR5005	9965 000 23346
ABUS Left	FPF18R-ABL5004	9965 000 23347
Signal Cable (Logic -ABUS,SUS)	FPF18R-CBL100103	9965 000 17431
Signal Cable (XSUS-YSUS)	FPF18R-CBL100103	9965 000 17431
Signal Cable (Logic - ABUS,SUS)	FPF18R-CBL200112	9965 000 17430
Signal Cable (XSUS-YSUS)	FPF18R-CBL200113	9965 000 23345

5.3.5 37" A1 ALiS Plasma Display Panel

These Plasma Display Panels are used in FM24 sets with production code AG00 and higher.

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF37C128128UB-72	9322 217 56682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FPF22R-XSS0003	9965 000 29948
Y-SUS board	FPF22R-YSS0009	9965 000 29949
Logic board	FPF22R-LGC0038	9965 000 29952
ABUS Right	FPF22R-ABL0014	9965 000 29951
ABUS Left	FPF22R-ABR0013	9965 000 29950
Signal Cable (Logic-ABUS, SUS)	FPF22R-CBL001201	9965 000 29944
Signal Cable (XSUS, YSUS)	FPF22R-CBL001221	9965 000 29945
Signal Cable (Logic-ABUS, SUS)	FPF22R-CBL001232	9965 000 29946
Signal Cable (XSUS, YSUS)	FPF22R-CBL001262	9965 000 29947
Power Cable	FPF22R-CBL000702	9965 000 29937
Power Cable	FPF22R-CBL000903	9965 000 29938
Power Cable	FPF22R-CBL000905	9965 000 29939

5.3.6 42" H1 ALiS Plasma Display Panel

These Plasma Display Panels are used in FM24 sets with production code AG00 and higher.

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF42C128128UB-54	9322 185 78682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FPF16R-XSS500203	9965 000 17423
Y-SUS board	FPF16R-YSS500303	9965 000 17424
Logic board	FPF16R-LGC5006	9965 000 17425 *1
ABUS Right	FPF16R-ABR5005	9965 000 17426
ABUS Left	FPF16R-ABL5004	9965 000 17427
Signal Cable (Logic-XSUS)	FPF16R-CBL200104	9965 000 17428
Signal Cable (Logic-YSUS)	FPF16R-CBL200106	9965 000 17429
Signal Cable (Logic-ABUS)	FPF18R-CBL200112	9965 000 17430
Signal Cable (XSUS-YSUS)	FPF18R-CBL100103	9965 000 17431

5.3.7 42" H2 ALiS Plasma Display Panel

These Plasma Display Panels are used in FM24 sets with production code:

- AG04 and higher for the sets 42FD9934/17S, 42FD9934/69S, 42FD9944/01S, 42FD9944/17S, 42FD9944/69S and 420P30/00
- AG06 and higher for the sets 42FD9954/69S

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF42C128128UB-72	9322 194 10682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FPF16R-XSS5008	9965 000 22704
Y-SUS board	FPF16R-YSS5009	9965 000 22705
Logic board	FPF16R-LGC500703	9965 000 22706 *1
ABUS Right	FPF16R-ABR5011	9965 000 22707
ABUS Left	FPF16R-ABL5010	9965 000 22708
Signal Cable (Logic-XSUS)	FPF16R-CBL200104	9965 000 17428
Signal Cable (Logic-YSUS)	FPF16R-CBL200106	9965 000 17429
Signal Cable (Logic-ABUS)	FPF18R-CBL200112	9965 000 17430
Signal Cable (XSUS-YSUS)	FPF18R-CBL100103	9965 000 17431

5.3.8 42" A1 ALiS Plasma Display Panel

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF42C128128UC-52	9322 212 78682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FPF23R-XSS 0005	9965 000 26824
Y-SUS board	FPF23R-YSS0010	9965 000 26825
Logic board	FPF23R-LGC0026	9965 000 26826
ABUS Right	FPF23R-ABR0002	9965 000 26823
ABUS Left	FPF23R-ABL0001	9965 000 26798
Signal Cable (Logic-ABUS, SUS)	FPF23R-CBL001203	9965 000 29940
Signal Cable (XSUS, YSUS)	FPF23R-CBL001223	9965 000 29941
Signal Cable (Logic-ABUS, SUS)	FPF23R-CBL001234	9965 000 29943
Signal Cable (XSUS, YSUS)	FPF23R-CBL001263	9965 000 29944
Power Cable	FPF23R-CBL000703	9965 000 29934
Power Cable	FPF23R-CBL000904	9965 000 29935
Power Cable	FPF23R-CBL000906	9965 000 29936

5.3.9 42" A2 ALiS Plasma Display Panel

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF42C128128UD-52	9322 224 77682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FPF28R-XSS0026	9965 000 32353
Y-SUS board	FPF28R-YSS0027	9965 000 32354
Logic board	FPF28R-LGC0045	9965 000 32352
ABUS Right	FPF28R-ABR0020	9965 000 32356
ABUS Left	FPF28R-ABL0019	9965 000 32355
Signal Cable (Logic-XSUS)	FPF28R-CBL003303	9965 000 32357
Signal Cable (Logic-YSUS)	FPF26R-CBL002611	9965 000 32358
Signal Cable (Logic-ABUS)	FPF28R-CBL003103	9965 000 32359
Signal Cable (XSUS-YSUS)	FPF26R-CBL002621	9965 000 32370

5.3.10 42" A3 ALiS Plasma Display Panel

The involved Plasma Display Panel is:

Display type	Service code number	Production code
FPF42C128128UE-52	9322 227 20682	

The available modules for these Plasma Display Panels are:

Module description	Factory code number	Service code number
X-SUS board	FBF29R-XSS0037	9965 000 32663
Y-SUS board	FPF29R-YSS0038	9965 000 32664
Logic board	FPF29R-LGC057	9965 000 32662
ABUS Left	FPF29R-ABR0031	9965 000 32666
ABUS Right	FPF29R-ABL0030	9965 000 32665
ABUS	FPF29R-ABR0026	9965 000 32667
Signal Cable (Logic-XSUS)	FPF29R-CBL001411	9965 000 32669
Signal Cable (Logic-YSUS)	FPF29R-CBL001412	9965 000 32670
Signal Cable (Logic-ABUS)	FPF29R-CBL001401	9965 000 32668
Signal Cable (XSUS, YSUS)	FPF29R-CBL003601	9965 000 32672
Signal Cable (Logic-ABUS)	FPF29R-CBL001421	9965 000 32671
PSU Cable (XSUS-ABUSR)	FPF29R-CBL003701	9965 000 32673

Remark:

***1)** If the Logic board is defective, the procedure mentioned in figures "Logic Board Exchange (1 and 2)" must be used.

5.3.11 Fault Finding Flowcharts

Problem analysis procedure PDP repair / Board swap

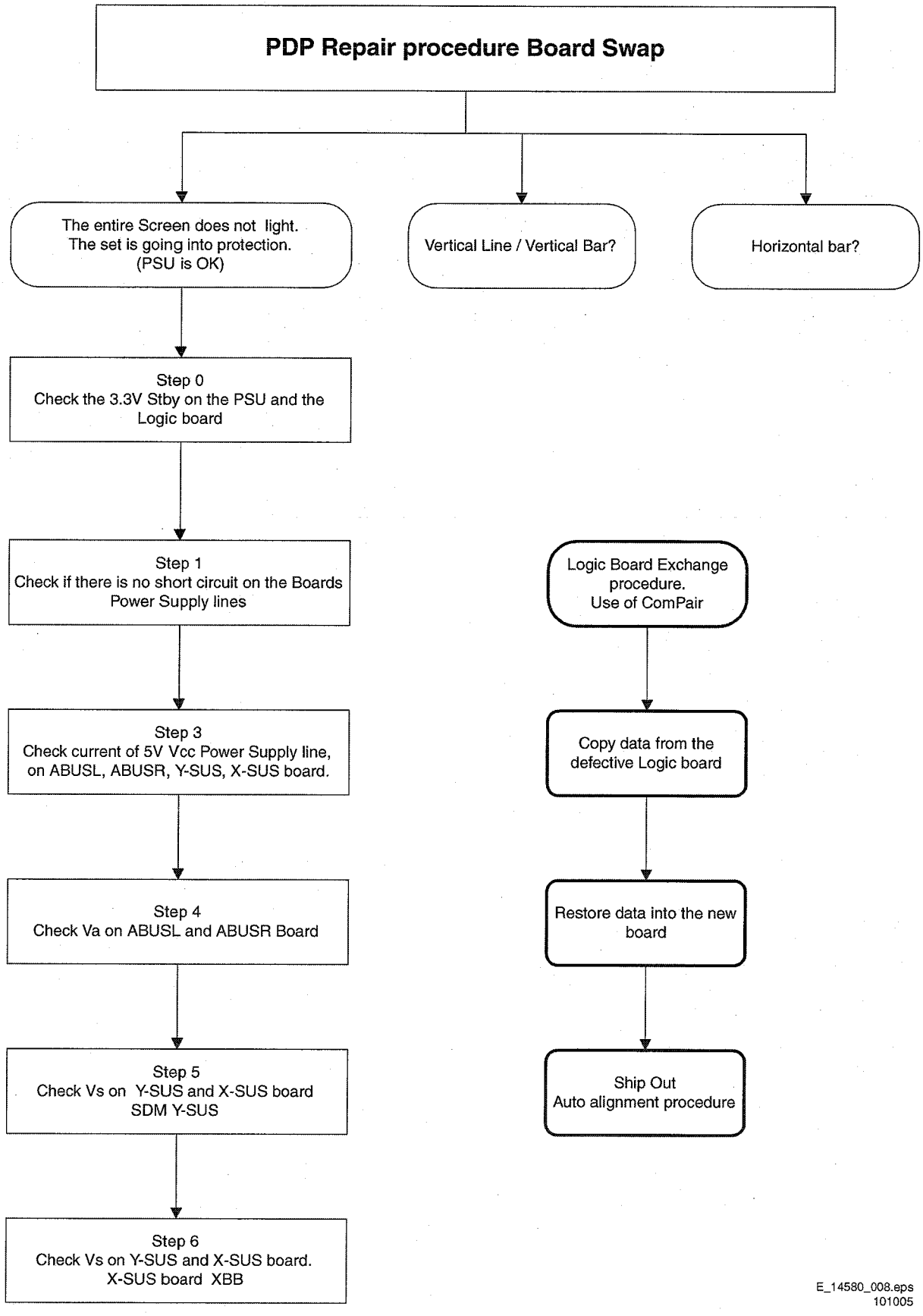
PDP Repair procedure Board Swap
The entire Screen does not light.
The set is going into protection.
(PSU is OK)
Vertical Line / Vertical Bar?
Horizontal bar?
Step 0
Check the 3.3V Stby on the PSU and the Logic board
Step 1
Check if there is no short circuit on the Boards Power Supply lines
Step 3
Check current of 5V Vcc Power Supply line, on ABUSL, ABUSR, Y-SUS, X-SUS board.
Step 4
Check Va on ABUSL and ABUSR Board
Step 5
Check Vs on Y-SUS and X-SUS board
SDM Y-SUS
Step 6
Check Vs on Y-SUS and X-SUS board.
X-SUS board XBB
Logic Board Exchange procedure.
Use of ComPair
Copy data from the defective Logic board
Restore data into the new board
Ship Out
Auto alignment procedure

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Figure 5-4 Problem analysis procedure PDP repair / board swap

Problem Analysis Procedure the entire screen does not light.

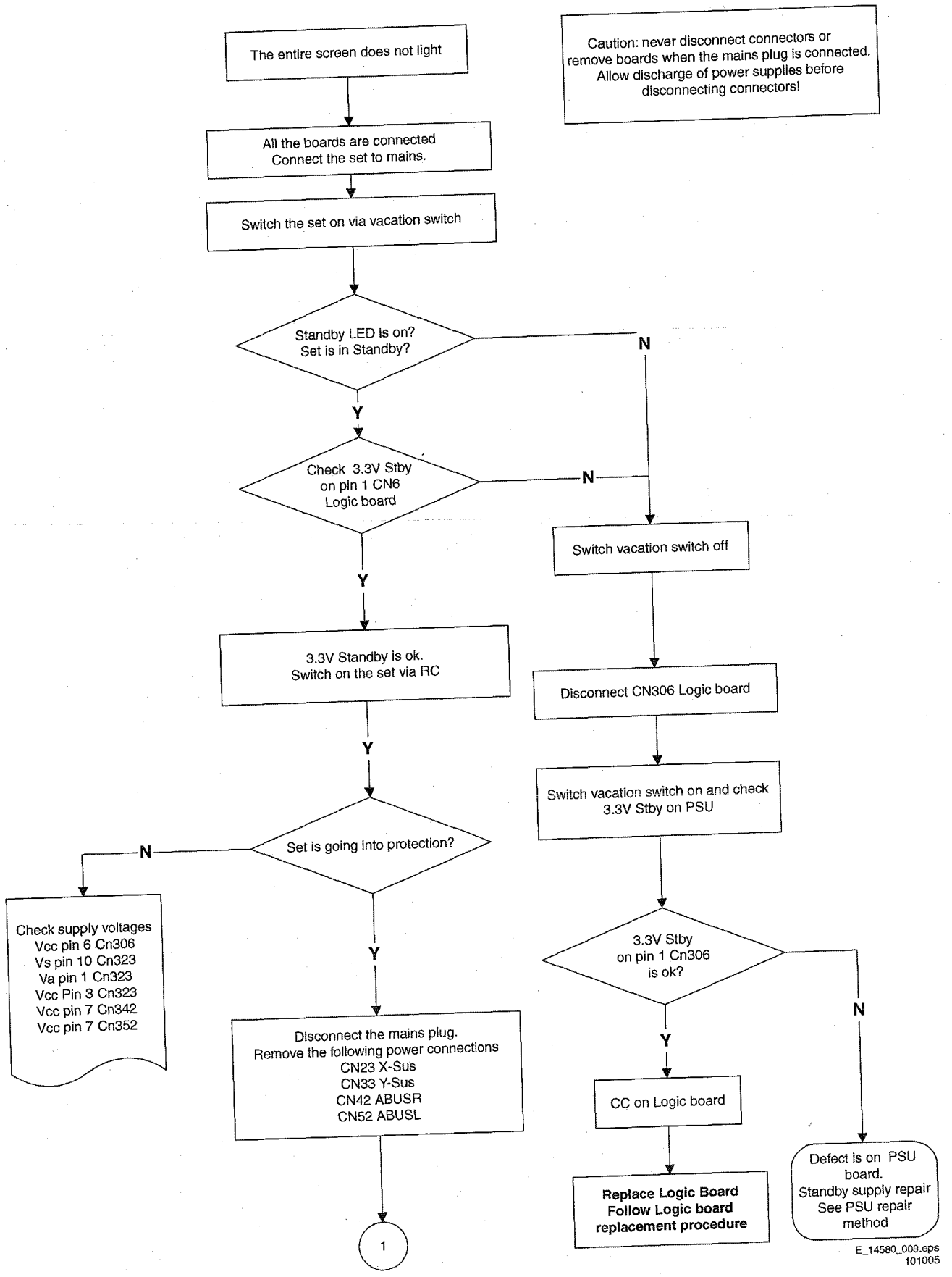

The entire screen does not light
Caution: never disconnect connectors or remove boards when the mains plug is connected. Allow discharge of power supplies before disconnecting connectors!
All the boards are connected Connect the set to mains.
Switch the set on via vacation switch
Standby LED is on? Set is in Standby?
N
Y
Check 3.3V Stby on pin 1 CN6 Logic board
N
Y
Switch vacation switch off
3.3V Standby is ok. Switch on the set via RC
Disconnect CN306 Logic board
Y
Switch vacation switch on and check 3.3V Stby on PSU
Set is going into protection?
N
Y
Check supply voltages
Vcc pin 6 Cn306
Vs pin 10 Cn323
Va pin 1 Cn323
Vcc Pin 3 Cn323
Vcc pin 7 Cn342
Vcc pin 7 Cn352
Disconnect the mains plug. Remove the following power connections
CN23 X-Sus
CN33 Y-Sus
CN42 ABUSR
CN52 ABUSL
3.3V Stby on pin 1 Cn306 is ok?
N
Y
CC on Logic board
Replace Logic Board Follow Logic board replacement procedure
Defect is on PSU board. Standby supply repair See PSU repair method
1
E_14580_009.eps
101005

Figure 5-5 Problem analysis procedure the entire screen does not light

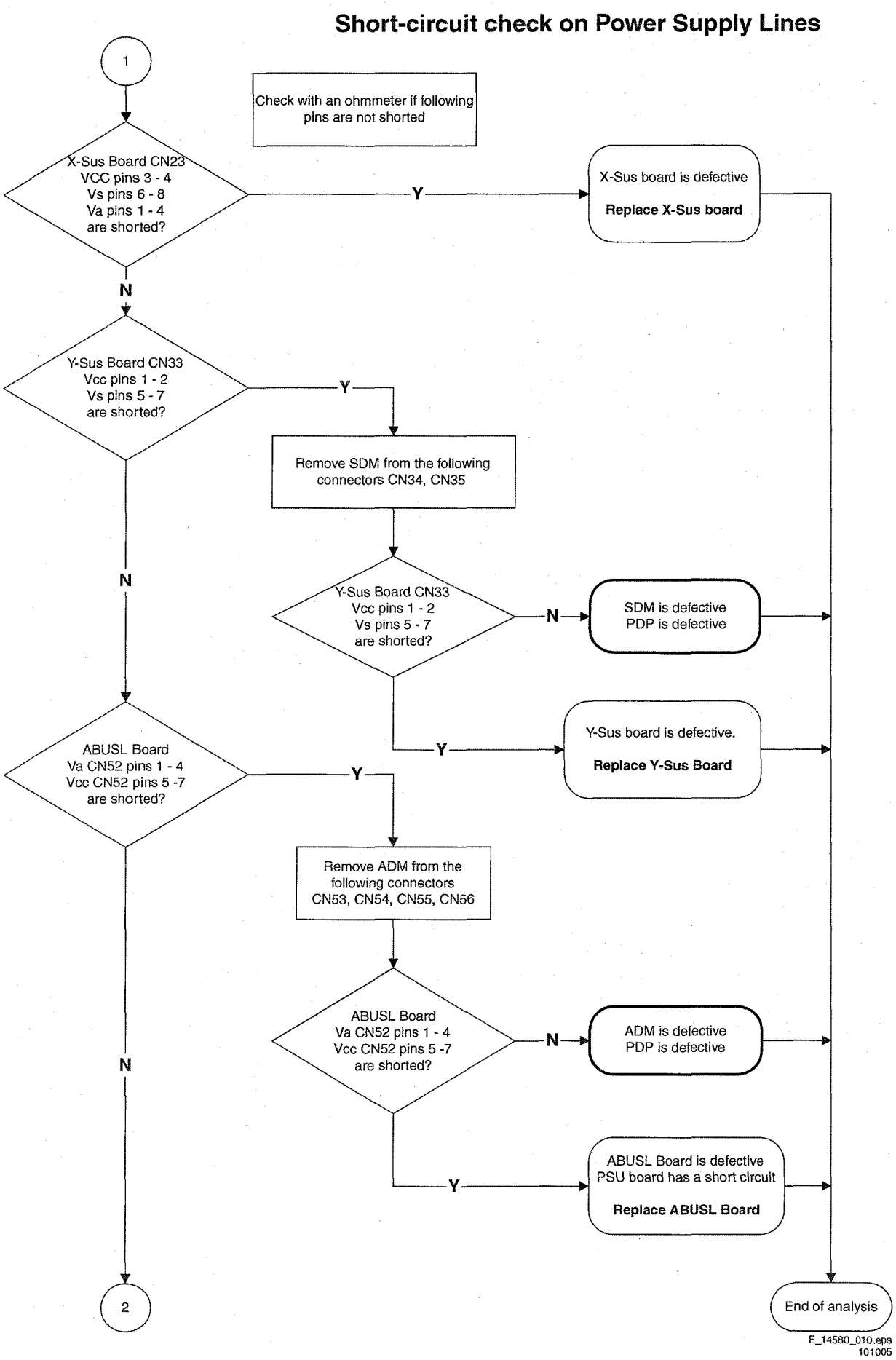

Short-circuit check on Power Supply Lines
1
Check with an ohmmeter if following pins are not shorted
X-Sus Board CN23 VCC pins 3 - 4 Vs pins 6 - 8 Va pins 1 - 4 are shorted?
Y
X-Sus board is defective
Replace X-Sus board
N
Y-Sus Board CN33 Vcc pins 1 - 2 Vs pins 5 - 7 are shorted?
Y
Remove SDM from the following connectors CN34, CN35
N
Y-Sus Board CN33 Vcc pins 1 - 2 Vs pins 5 - 7 are shorted?
N
SDM is defective PDP is defective
Y
Y-Sus board is defective.
Replace Y-Sus Board
ABUSL Board Va CN52 pins 1 - 4 Vcc CN52 pins 5 -7 are shorted?
Y
Remove ADM from the following connectors CN53, CN54, CN55, CN56
N
ABUSL Board Va CN52 pins 1 - 4 Vcc CN52 pins 5 -7 are shorted?
N
ADM is defective PDP is defective
Y
ABUSL Board is defective PSU board has a short circuit
Replace ABUSL Board
2
End of analysis
E_14580_010.eps
101005

Figure 5-6 Short circuit check on power supply lines (1/2)

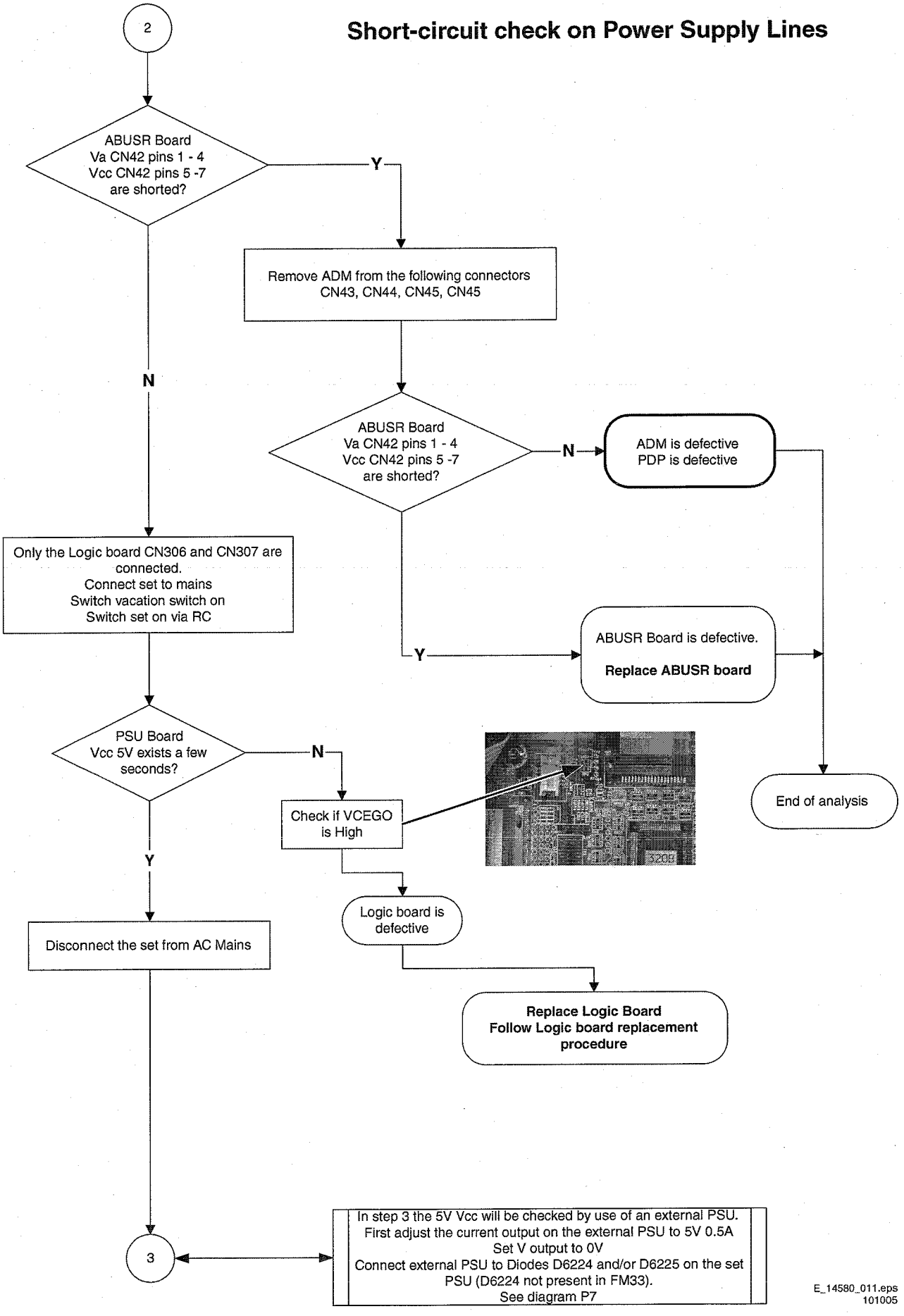

2
Short-circuit check on Power Supply Lines
ABUSR Board
Va CN42 pins 1 - 4
Vcc CN42 pins 5 -7
are shorted?
Y
N
Remove ADM from the following connectors
CN43, CN44, CN45, CN45
ABUSR Board
Va CN42 pins 1 - 4
Vcc CN42 pins 5 -7
are shorted?
N
ADM is defective
PDP is defective
Y
ABUSR Board is defective.
Replace ABUSR board
Only the Logic board CN306 and CN307 are connected.
Connect set to mains
Switch vacation switch on
Switch set on via RC
PSU Board
Vcc 5V exists a few seconds?
N
Y
Check if VCEGO is High
End of analysis
Logic board is defective
Disconnect the set from AC Mains
Replace Logic Board
Follow Logic board replacement procedure
3
In step 3 the 5V Vcc will be checked by use of an external PSU.
First adjust the current output on the external PSU to 5V 0.5A
Set V output to 0V
Connect external PSU to Diodes D6224 and/or D6225 on the set
PSU (D6224 not present in FM33).
See diagram P7
E_14580_011.eps
101005

Figure 5-7 Short circuit check on power supply lines (2/2)

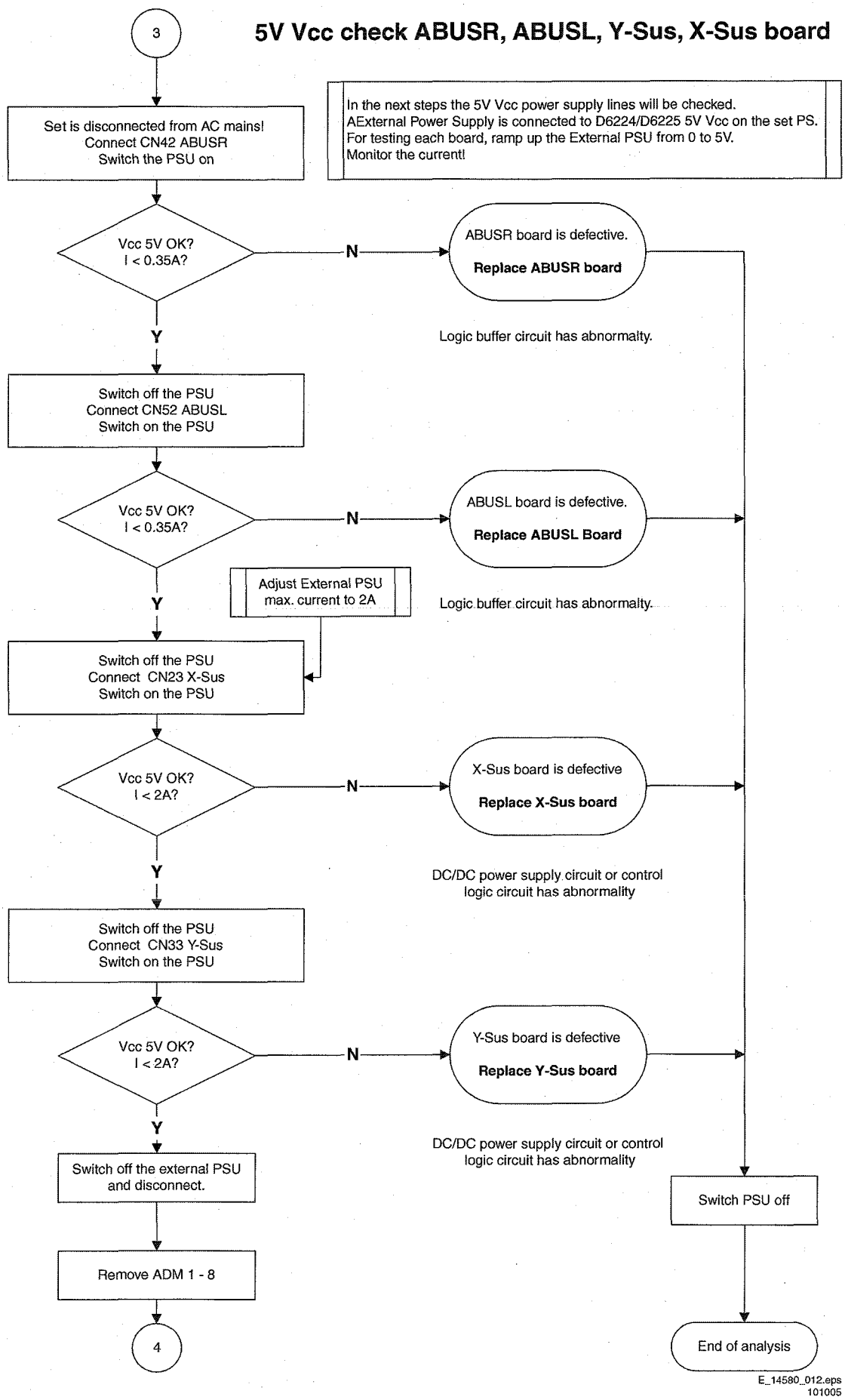


Figure 5-8 5V Vcc check ABUSR, ABUSL, Y-Sus X-Sus board

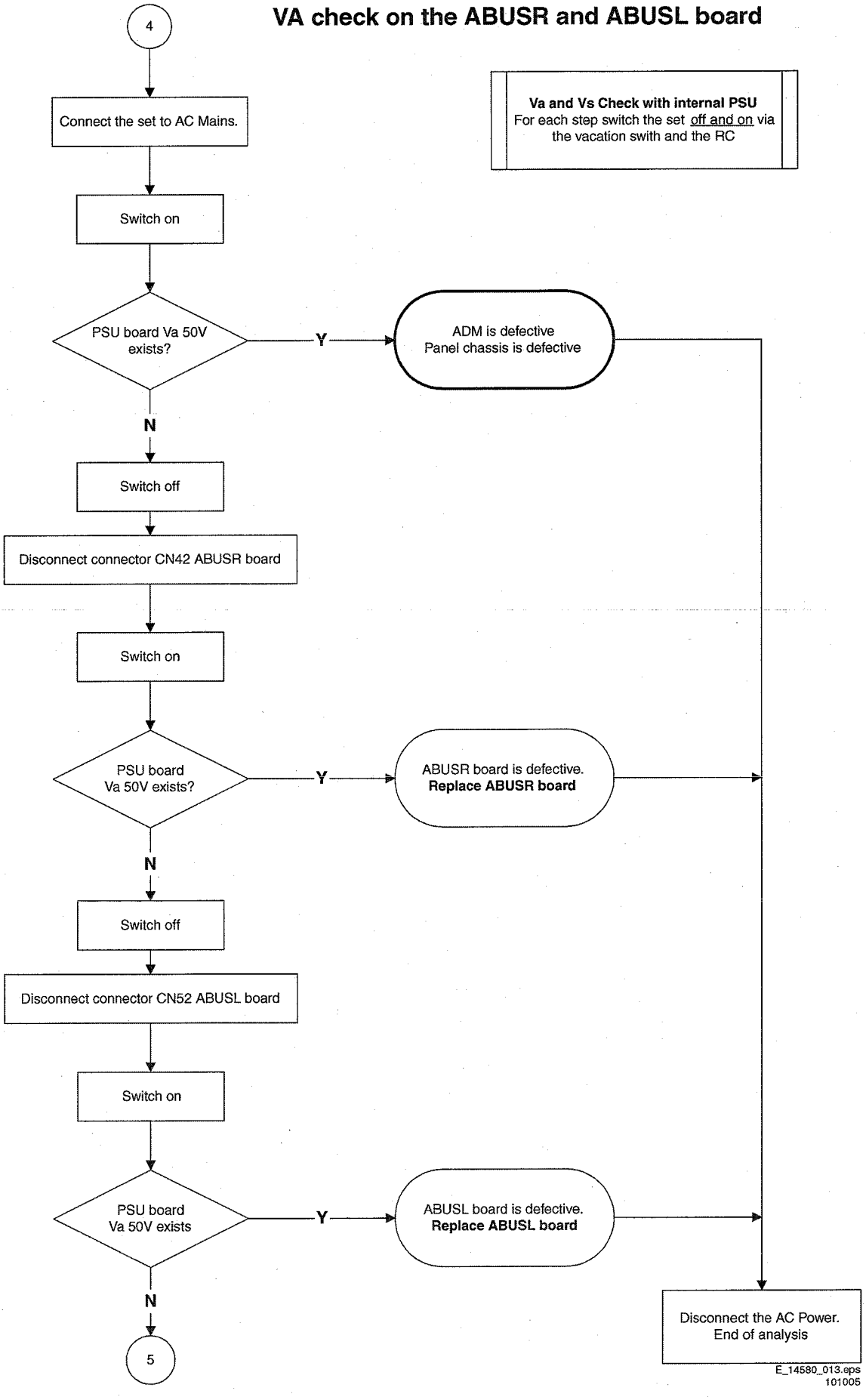


Figure 5-9 VA check on the ABUSR and ABUSL board

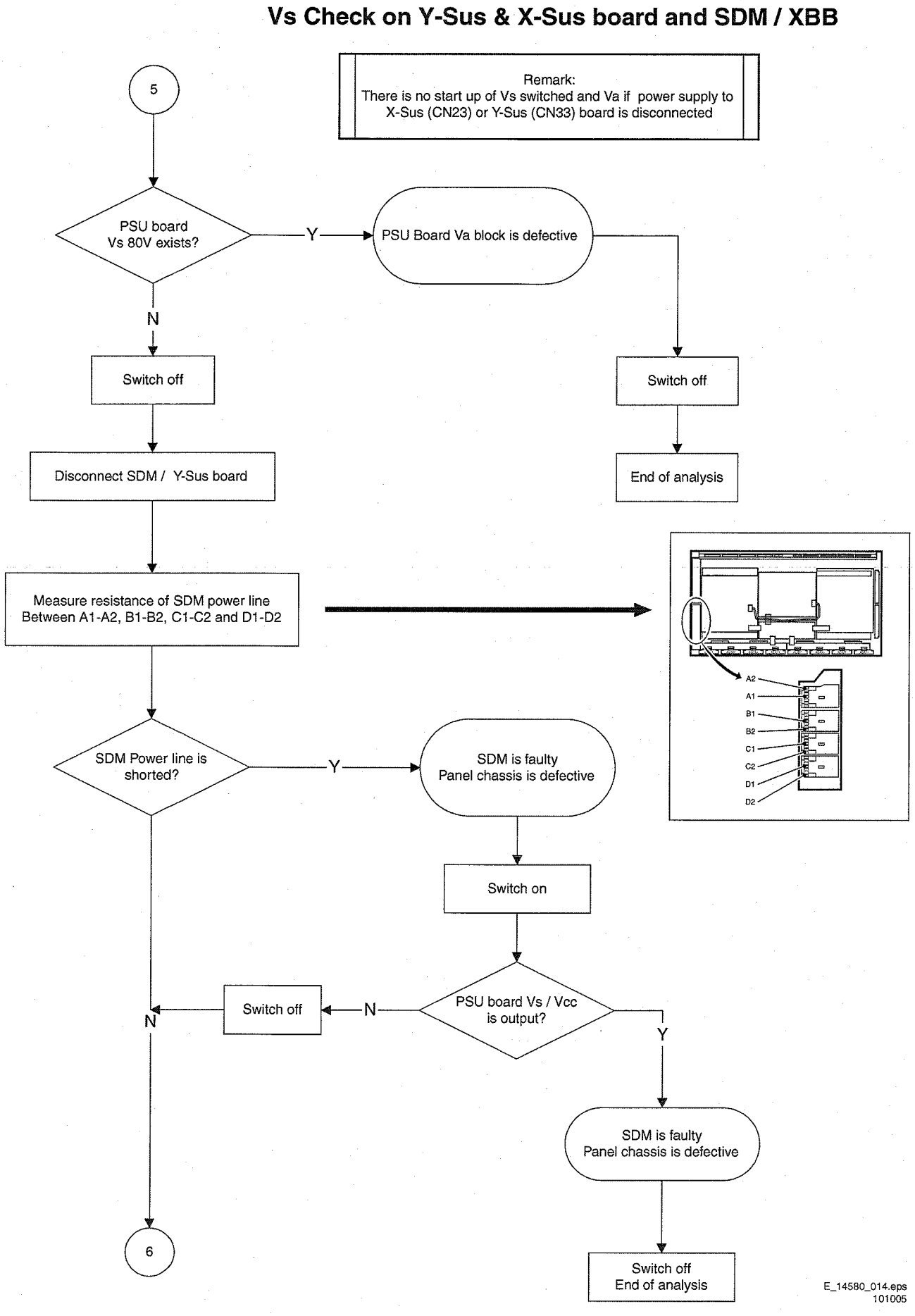


Figure 5-10 Vs check on the Y-Sus and X-Sus board, and SDM / XBB (1/2)

Vs Check on Y-Sus & X-Sus board and SDM / XBB

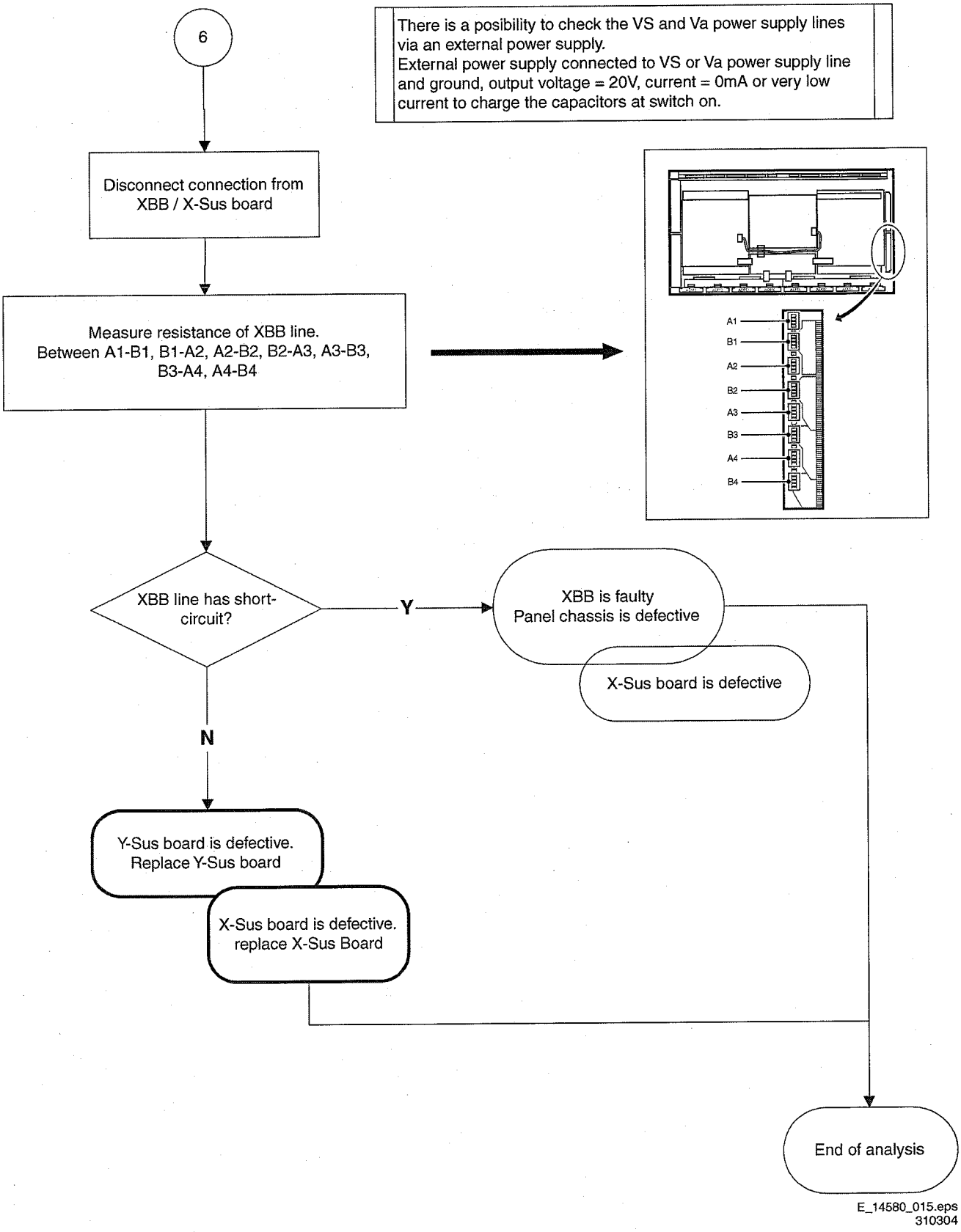

6
There is a posibility to check the VS and Va power supply lines via an external power supply.
External power supply connected to VS or Va power supply line and ground, output voltage = 20V, current = 0mA or very low current to charge the capacitors at switch on.
Disconnect connection from XBB / X-Sus board
Measure resistance of XBB line.
Between A1-B1, B1-A2, A2-B2, B2-A3, A3-B3, B3-A4, A4-B4
A1
B1
A2
B2
A3
B3
A4
B4
XBB line has short-circuit?
Y
XBB is faulty
Panel chassis is defective
X-Sus board is defective
N
Y-Sus board is defective.
Replace Y-Sus board
X-Sus board is defective.
replace X-Sus Board
End of analysis
E_14580_015.eps
310304

Figure 5-11 Vs check on the Y-Sus and X-Sus board, and SDM / XBB (2/2)

Vertical Line / Vertical bar Problem analysis procedure

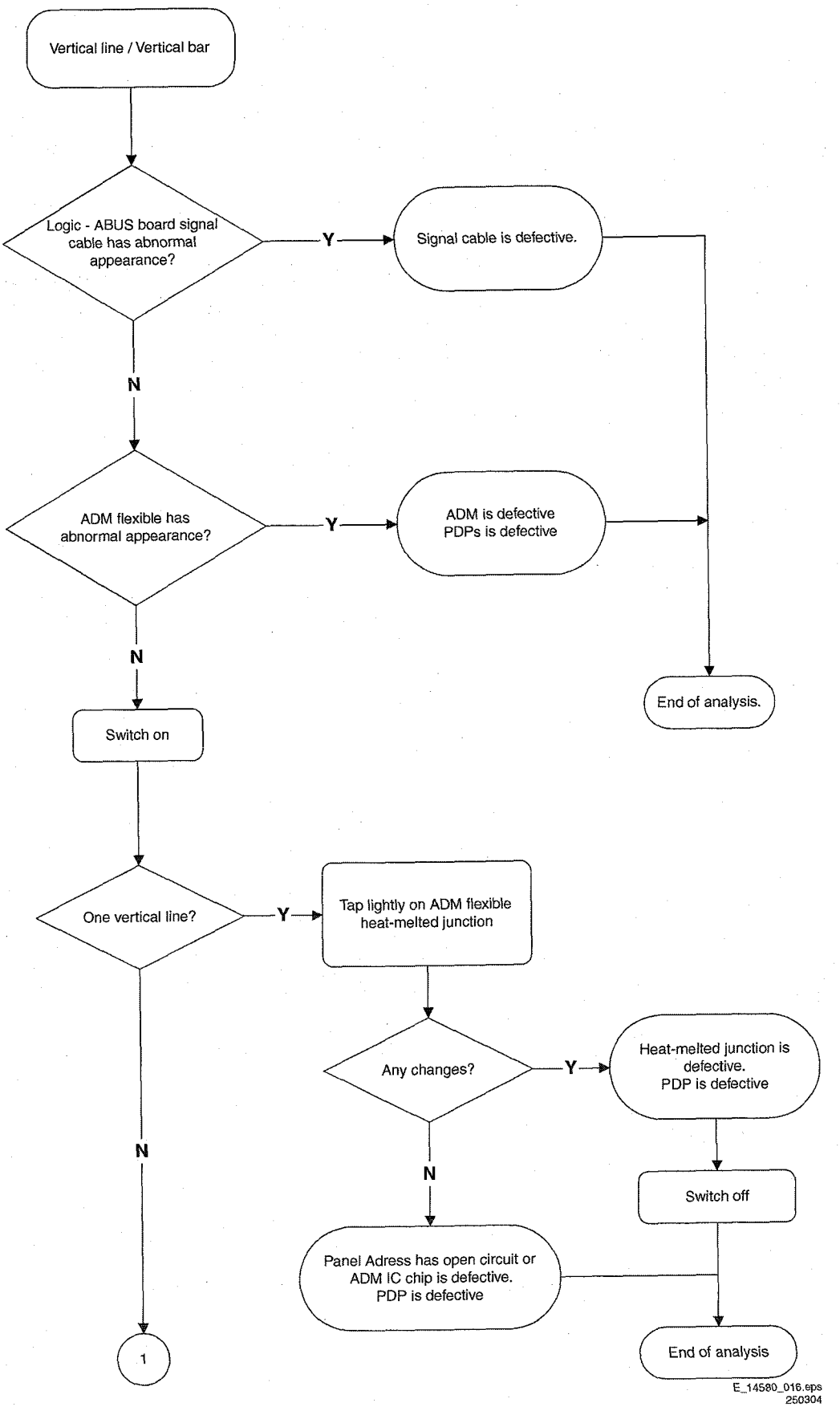


Figure 5-12 Vertical line / vertical bar problem analysis procedure (1/4)

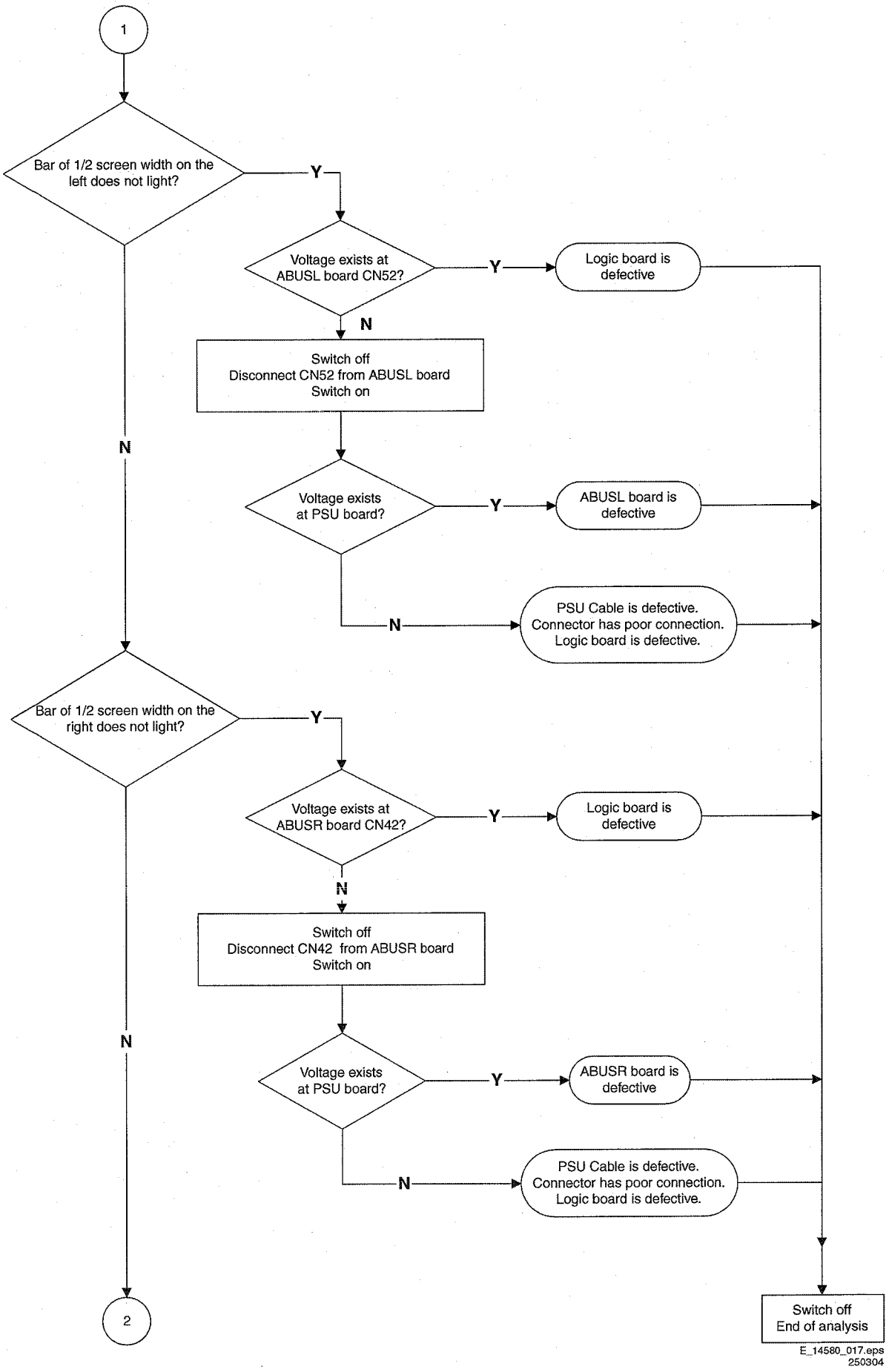


Figure 5-13 Vertical line / vertical bar problem analysis procedure (2/4)

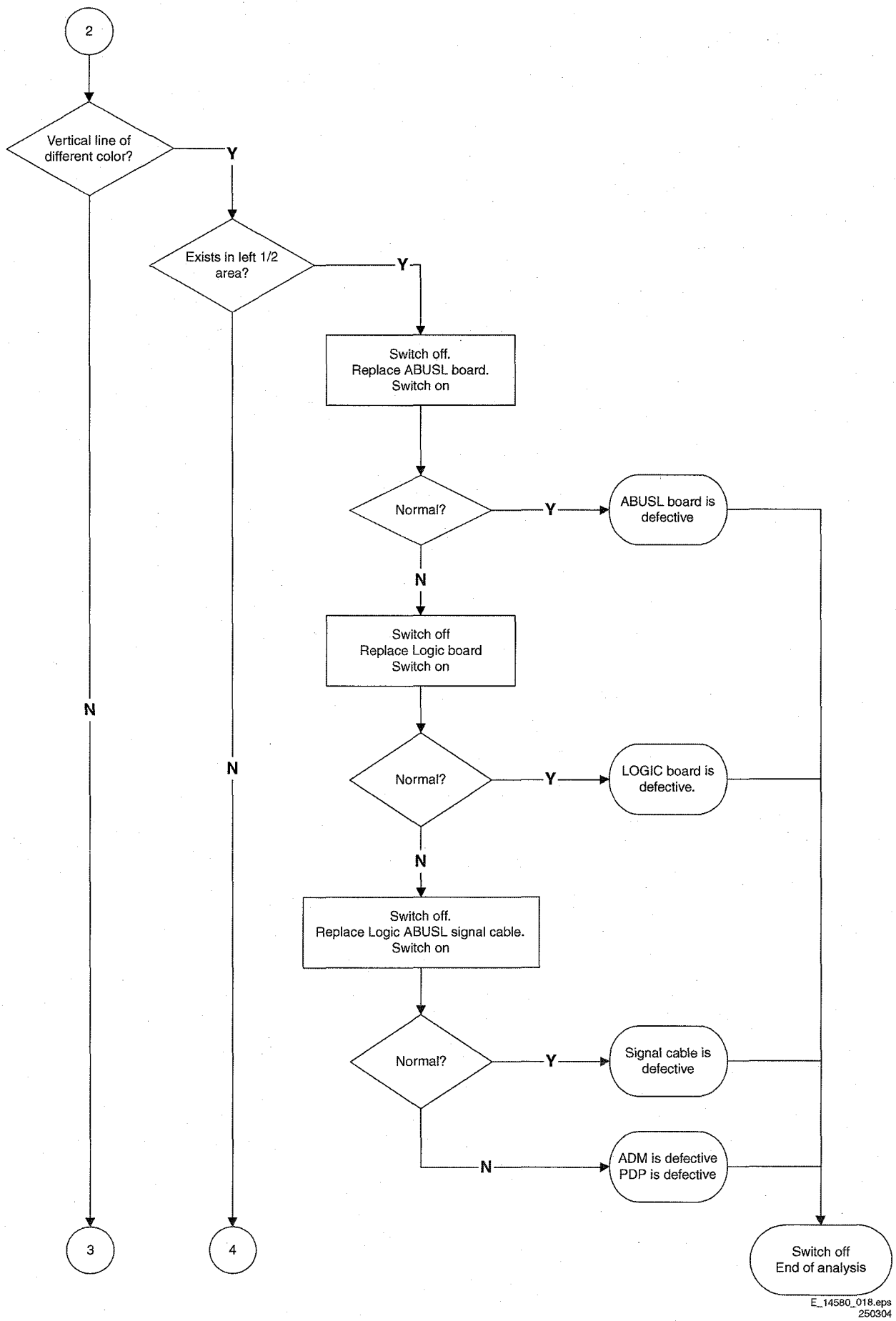


Figure 5-14 Vertical line / vertical bar problem analysis procedure (3/4)

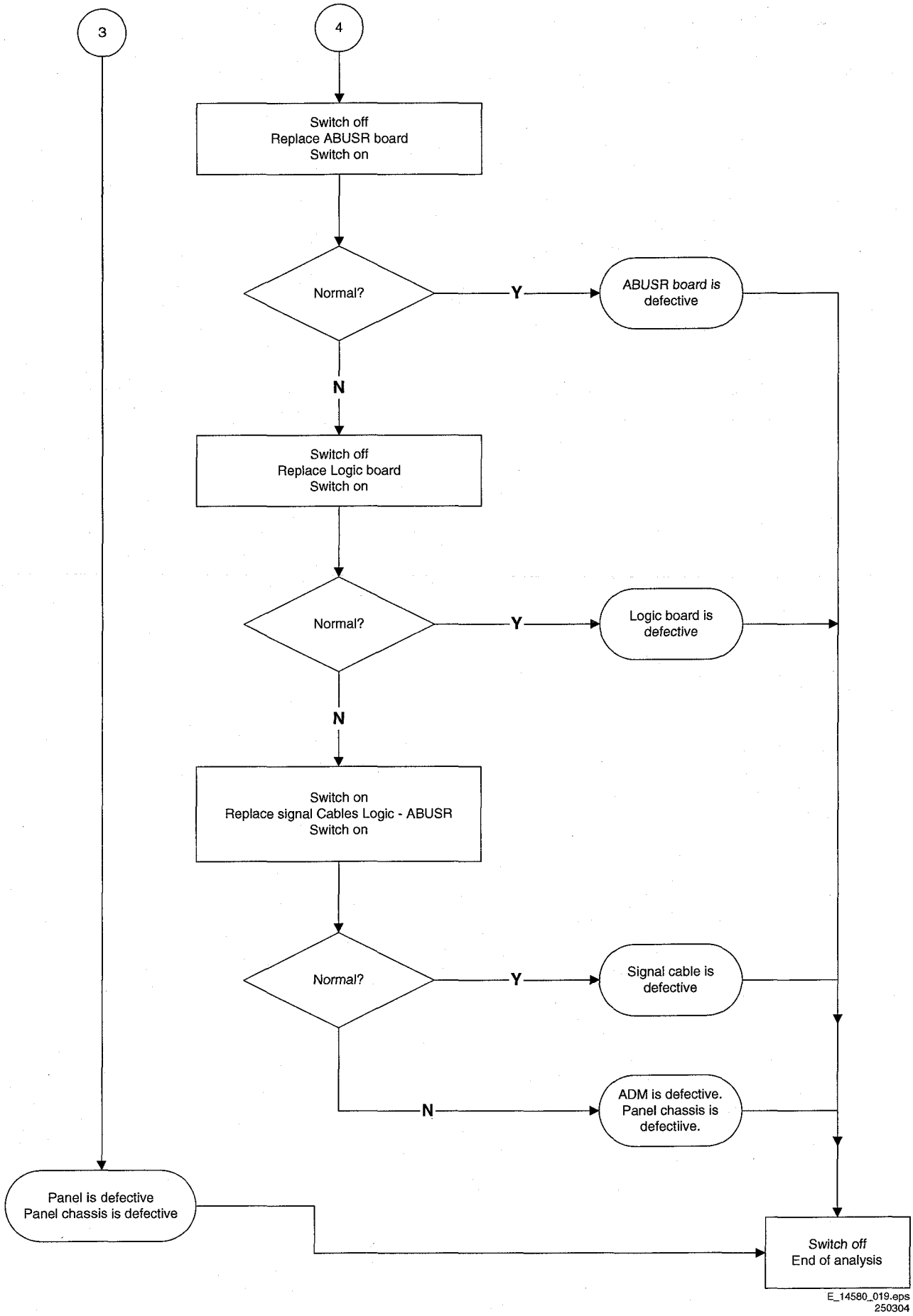


Figure 5-15 Vertical line / vertical bar problem analysis procedure (4/4)

Horizontal bar problem analysis procedure

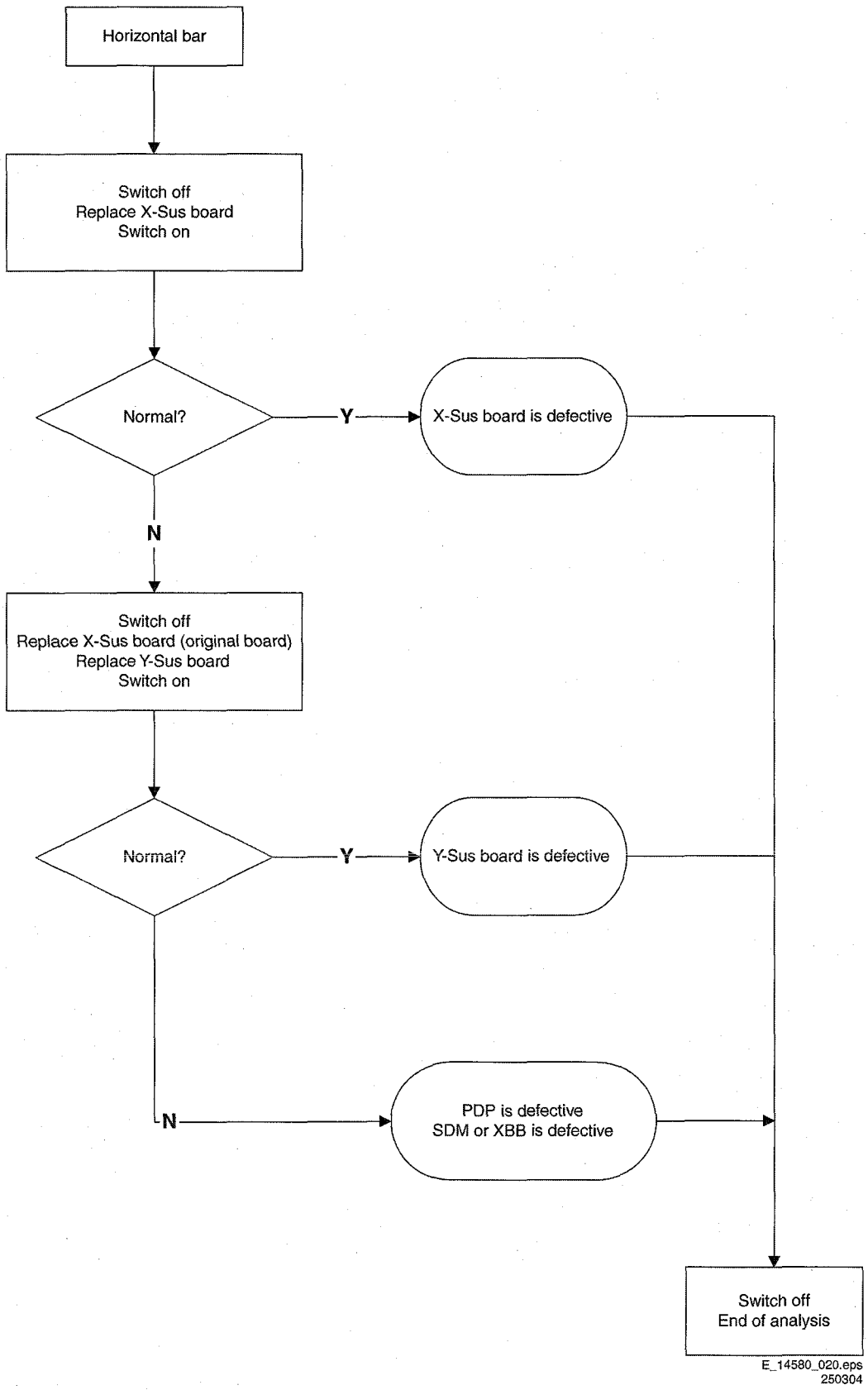


Figure 5-16 Horizontal bar problem analysis

Remark: Do not interchange boards between different PDPs, this can damage your PDP

Logic Board Exchange (1)

1. Copy NVM Data from defective Logic Board

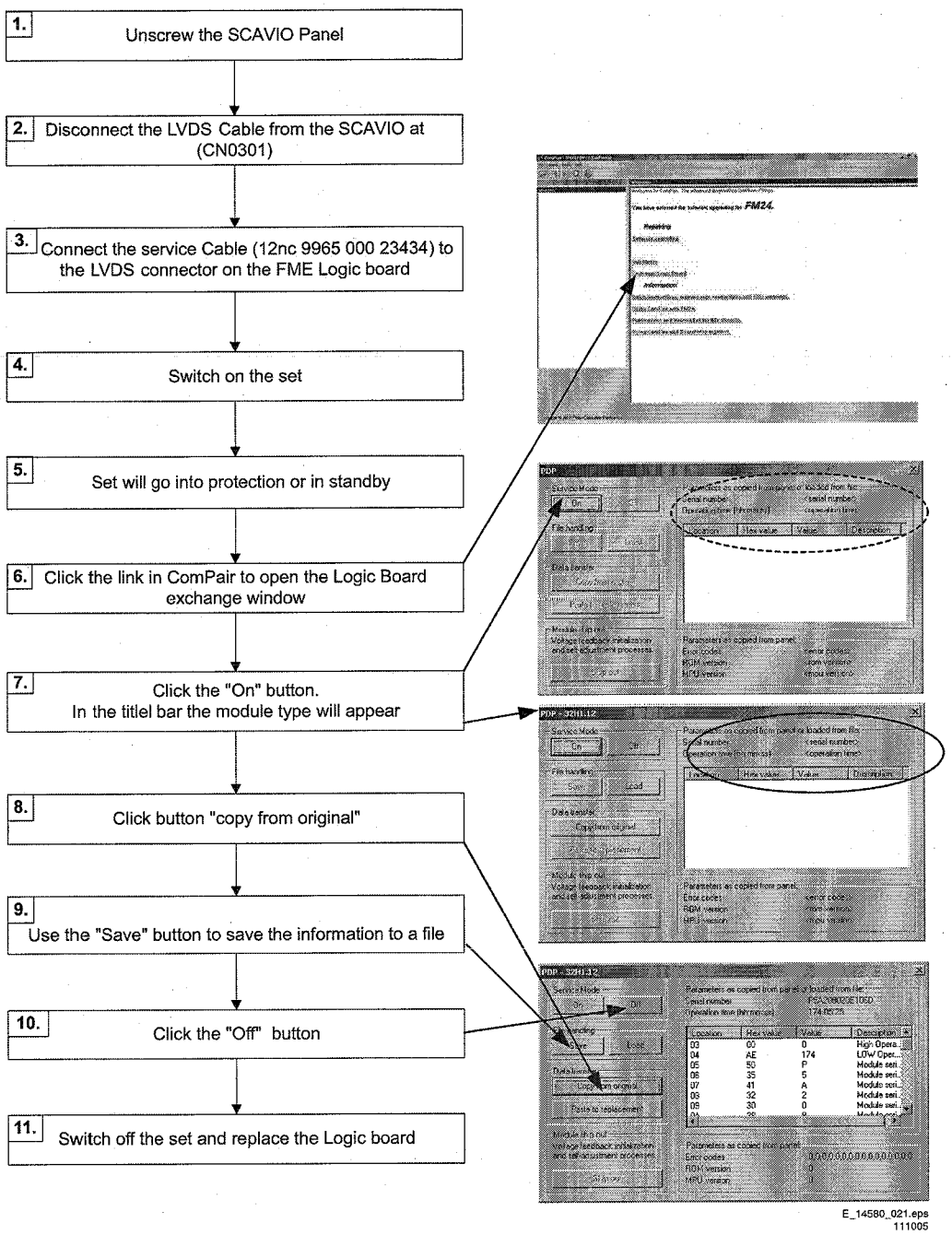
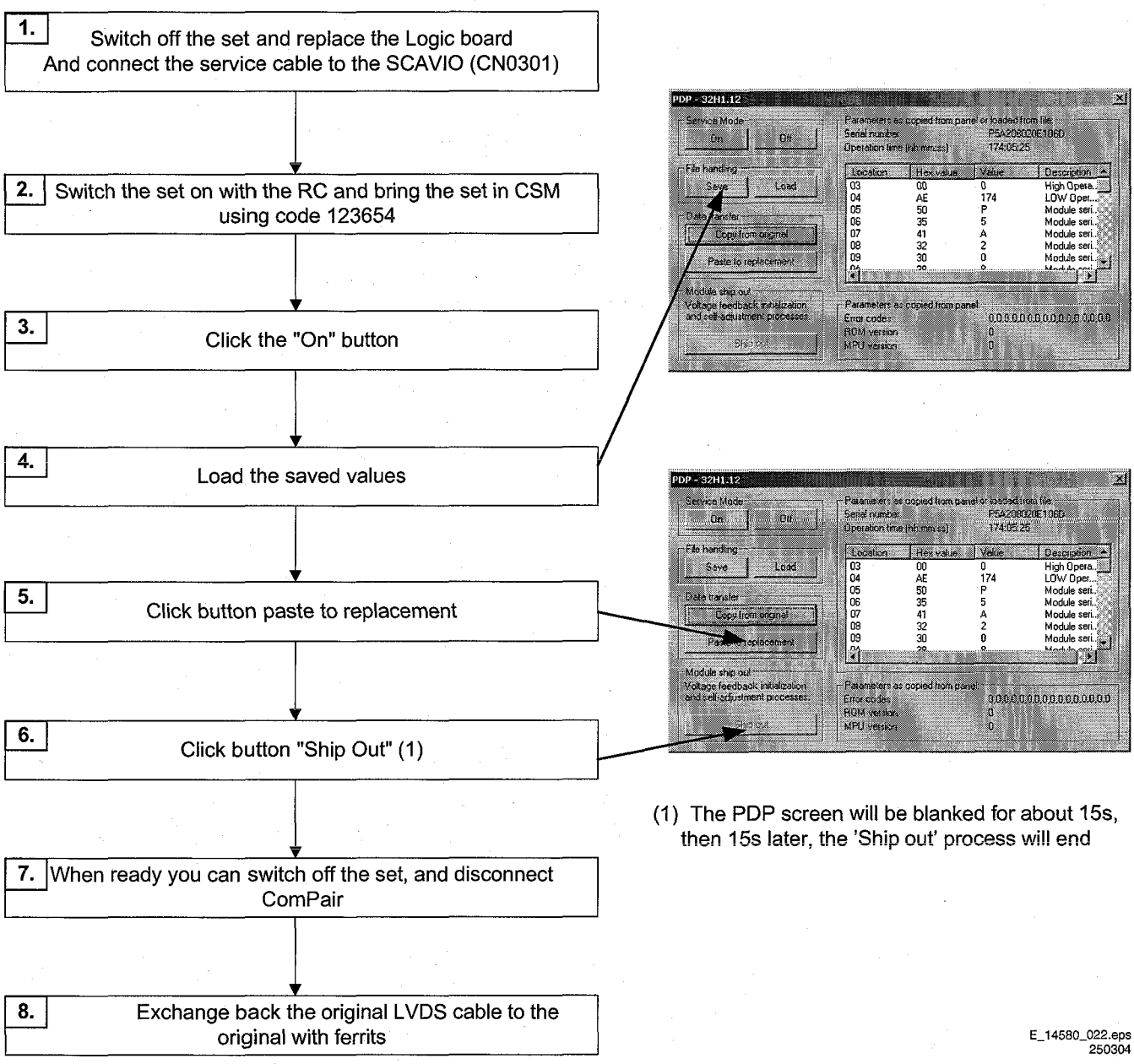

1. Unscrew the SCAVIO Panel
2. Disconnect the LVDS Cable from the SCAVIO at (CN0301)
3. Connect the service Cable (12nc 9965 000 23434) to the LVDS connector on the FME Logic board
4. Switch on the set
5. Set will go into protection or in standby
6. Click the link in ComPair to open the Logic Board exchange window
7. Click the "On" button. In the titlel bar the module type will appear
8. Click button "copy from original"
9. Use the "Save" button to save the information to a file
10. Click the "Off" button
11. Switch off the set and replace the Logic board
E_14580_021.eps
111005

Figure 5-17 Logic Board Exchange (1/2)

1. Unscrew the SCAVIO panel. Now you can reach the cable going to connector CN1 on the Logic Board
2. Disconnect the cable from the SCAVIO panel at connector 0301. Leave the rest connected!
3. Connect the ComPair I2C cable as given in this diagram.
4. Switch on the set. It will go to stand-by or protection mode.
5. Click the link in ComPair to open the Logic Board exchange window.
6. Click the 'On' button. In the title bar the module type will appear: 37H1.11, 42H2, or something similar.
7. Click button 'Copy from original'
8. The data is read from the EEPROM on the logic board and displayed in the list.
9. Use the 'Save' button to save the information to a file. This is optional, but better safe than sorry!
   Note: If you close the window without saving, all settings will be lost. If you intend to close this window before replacing the board, you should save the settings so you can load them later.
10. Click the 'Off' button.
11. Switch off the set and replace the Logic Board with another one.

Logic Board Exchange (2)

2. Write NVM Data to the new Logic Board


1. Switch off the set and replace the Logic board And connect the service cable to the SCAVIO (CN0301)
2. Switch the set on with the RC and bring the set in CSM using code 123654
3. Click the "On" button
4. Load the saved values
5. Click button paste to replacement
6. Click button "Ship Out" (1)
7. When ready you can switch off the set, and disconnect ComPair
8. Exchange back the original LVDS cable to the original with ferrits
PDP - 32H1.12
Service Mode
On
Off
File handling
Save
Load
Data transfer
Copy from original
Paste to replacement
Module ship out
Voltage feedback initialization and self-adjustment processes
Ship out
Parameters as copied from panel or loaded from file
Serial number
Operation time (hh:mm:ss)
Location
Hex value
Value
Description
Parameters as copied from panel
Error codes
ROM version
MPU version

(1) The PDP screen will be blanked for about 15s, then 15s later, the 'Ship out' process will end

E_14580_022.eps
250304

Figure 5-18 Logic Board Exchange (2/2)

1. Switch off the set and replace the Logic Board with another one. Now also connect the cable to connector 0301 as depicted in the diagram above.
2. Restart the set with the new board. Switch on the set with the remote control and activate CSM (123654). This is to prevent the set to switch off because no input devices are connected.
3. Click the 'On' button.
4. The module type will again appear in the title bar. This may be different now from step 7 because another Logic Board is used. If you closed the window after step 9 and did save the settings you should load them now. Use the Load button to do so.
5. Click button 'Paste to replacement'. The settings previously copied from the old board are now written to the new board. If successful the button 'Ship out' will be enabled.
6. Click button 'Ship out'.
7. Now a process of voltage feedback initialization and self-adjustment starts. This will take a few seconds. When ready you can switch off the set, disconnect ComPair and restart the set again to test.
8. Exchange the service LVDS cable with the original LVDS cable.

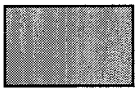
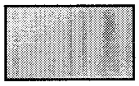
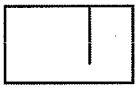
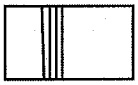
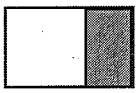
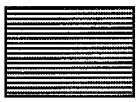
No	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
1	Entire screen does not light.	After momentarily going on, the screen becomes black immediately or after a few seconds. Main power is turned off.		X-SUS, Y-SUS PSU Panel chassis LOGIC ABUSL ABUSR	Refer to the entire screen does not light.
2		Screen lights dimly even on the back screen		LOGIC	Replace LOGIC board and folow Logic Board echange procedure
3	Vertical Line	Single vertical line (of different color)		Panel chassis LOGIC	Refer to vertical Line / bar..
4		Vertical line from the middle of effective scan area (Vertical line of different color)		Panel chassis	Replace panel chassis
5	Vertical bar	Bar width of 1/7 0f horizontal size or in multiples of 1/7, is displayed. Abnormal display.		Panel chassis ABUSL ABUSR LOGIC Above boards are connected	Refer to vertical Line / bar..
6		Bar width of 3/7 or 4/7 of the screen width, is displayed. Abnornial display. (Vertical line of different color)		Panel chassis ABUSL ABUSR LOGIC Above boards are connected	Refer to vertical Line / bar..
7	Horizontal line	Single horizontal line (No light) or single horizontal does not light among the effective scanning area. Single horizontal line does not light		Panel chassis	Replace panel chassis
8		Every other line(No light) Entire screen		X-SUS Y-SUS	Replace X-SUS Y-SUS board

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Figure 5-19 Fault symptom overview (1/3)

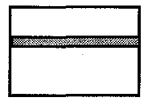
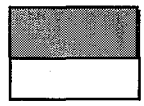
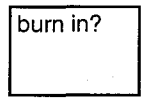
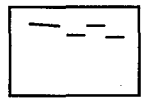
No	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
9	Horizontal bar	Bar width of 1/8 or multiples of 1/8 of the screen height, is displayed Abnormal (Screen does light)		Panel chassis	Replace panel chassis
10		Bar width of 1/2 of the screen height. Abnormal display (Screen does not light)		Panel chassis Y-SUS, X-SUS Above boards are connected	Refer to horizontal bar.
11	Image sticking. Burn in?	Fixed display contents are always displayed.		Panel chassis	Perform all white heat run. After judgment, replace panel chassis if needed.
12	Stains	Oval-shaped points having abnormal luminance are scattered in the upper or lower part of screen.		Panel chassis	Perform all white heat run. After judgment, replace panel chassis.
13	Twinkle	The entire screen momentarily becomes brighter or darker.		Poor connector contact. Panel chassis	
14	Flicker	The entire screen flickers continuously		Poor connector contact. FFC (Flat Foil connector Cable)	Connector / cable reconnection or Cable Exchange
15	Luminance is abnormal	Screen is too dark or too bright. (Out of specifications)			
16	Chrominance is abnormal	Colors cannot be displayed orrectly.		LOGIC	Replace LOGIC board and folow Logic Board echange procedure
17	Sync is disturbed			LOGIC	

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Figure 5-20 Fault symptom overview (2/3)

No	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
18	Picture distorted			LOGIC	Replace LOGIC board and folow Logic Board echange procedure
19	Steps of gradations are skipped	Luminance linearity is poor.		LOGIC	
20	Abnormal sound			PSU, X-SUS Y-SUS (Core is broken, or transformer is abnormal)	Locate cause of abnormality from listening and viewing. Replace the cause of problem
21	Control on external communication is abnormal	Contrast, color temperature adjustment and Y cannot be changed.		LOGIC	Replace LOGIC board and folow Logic Board echange procedure

E_14580_007.eps
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Figure 5-21 Fault symptom overview (3/3)

5.4 Defect Description Form

This form must be used by the workshops for warranty claims:

DDF FLAT TV (panels & boards) version 1.1 — Date last modified: 08/03/2005

To be filled in by WORKSHOP / WORK CENTER

Country:	Philips	Type nr./Model nr. set	
		Serial nr. set	
Customer Account nr.:	LCD & Plasma	Type nr. display	
	DEFECT DESCRIPTION	Serial nr. display	
Job sheet nr.:	FORM	Part nr display (12nc)	
		Return number	0170 _ _ _ _ _ _

GENERAL REPAIR DATA

Condition	❒ Constantly ❒ Intermittently ❒ After a while	❒ In a hot environment ❒ In a cold environment ❒ Other : .....
Symptom(s)	❒ No backlight ❒ No picture ❒ Picture too bright ❒ Shading / smearing on picture ❒ Only partial picture ❒ Unstabel picture	❒ Flickering / flashing picture ❒ Lines across/down image ❒ Inactive row(s) ❒ Inactive column(s) ❒ Missing colour(s) ❒ Other: .....

PANEL REPAIR

Pixel Defect(s):	❒ Dark dots ❒ Bright dots	Qty of dots :	Mark Defect(s)	Picture Insert picture or mark defect !

Symptoms Out of warranty	Following defect symptoms are out of warranty:	These symptoms are not claimable.
	• Broken glass • Scratch(es) on display	• Number of dark/bright pixels within spec. • Burn in (only for Plasma TV)

BOARD REPAIR — For Plasma TV repair only

	Spare Part Nr. New Board	Barcode Nr. Defect Board	Barcode Nr. Replaced Board
1.			
2.			
3.			
4.			

To be filled in by EUROSERVICE	RMA number:	Date of receipt:

Note 1: The defective LCD-panel / PDP needs to be returned in the same packaging as the new part was send. If not the warranty claim will be rejected.

Note 2: Please fill out this form completely and correctly, otherwise Euroservice is unable to fulfil the repair request!

Owner: PHILIPS CE EUROSERVICE — DE10WEG

F_16590_115.eps 110705

Figure 5-22 Defect Description Form (DDF)

6. Block Diagrams, Test point Overview, and Waveforms

6.1 Block Diagrams

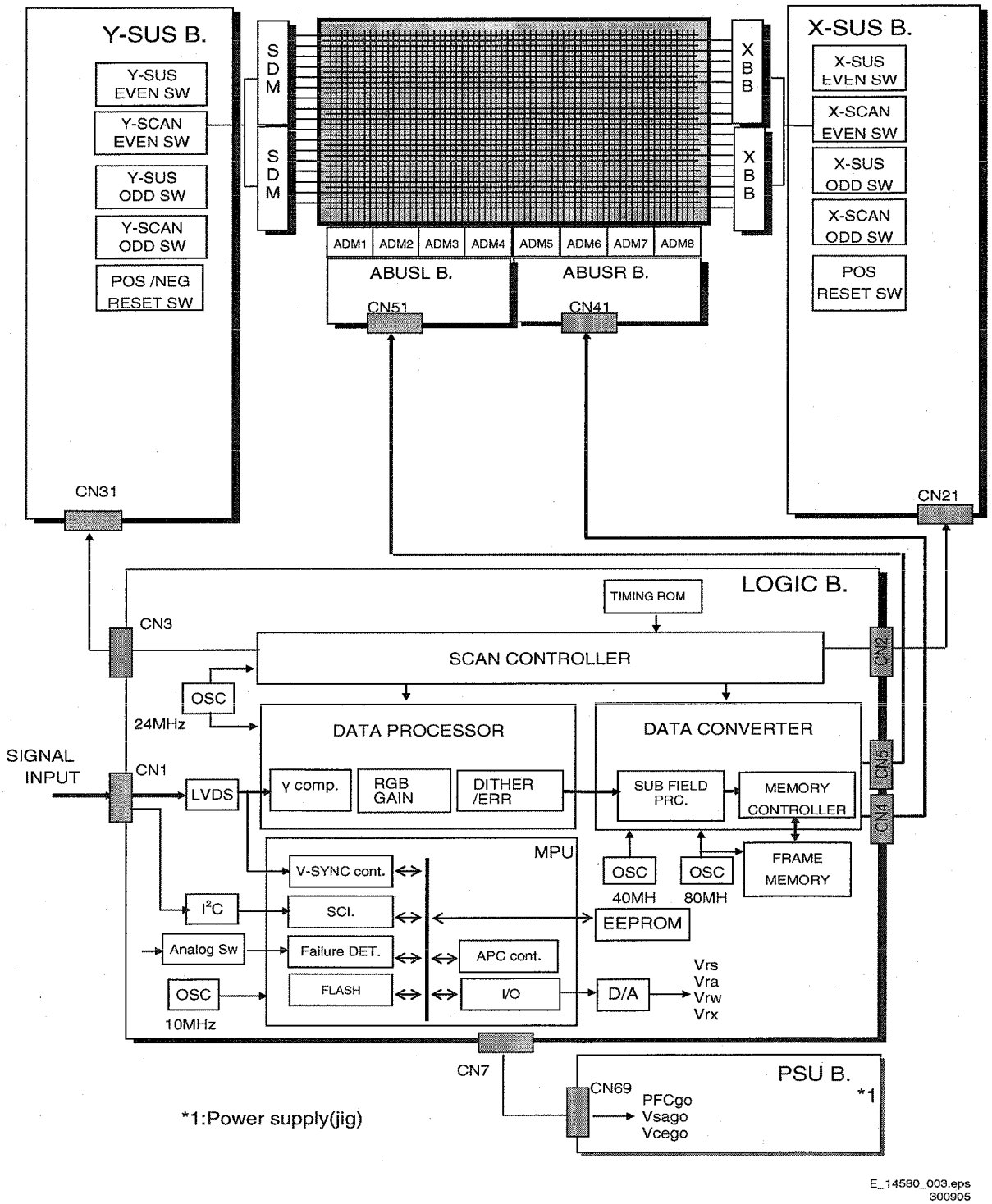

Figure 6-1 Signal block diagram

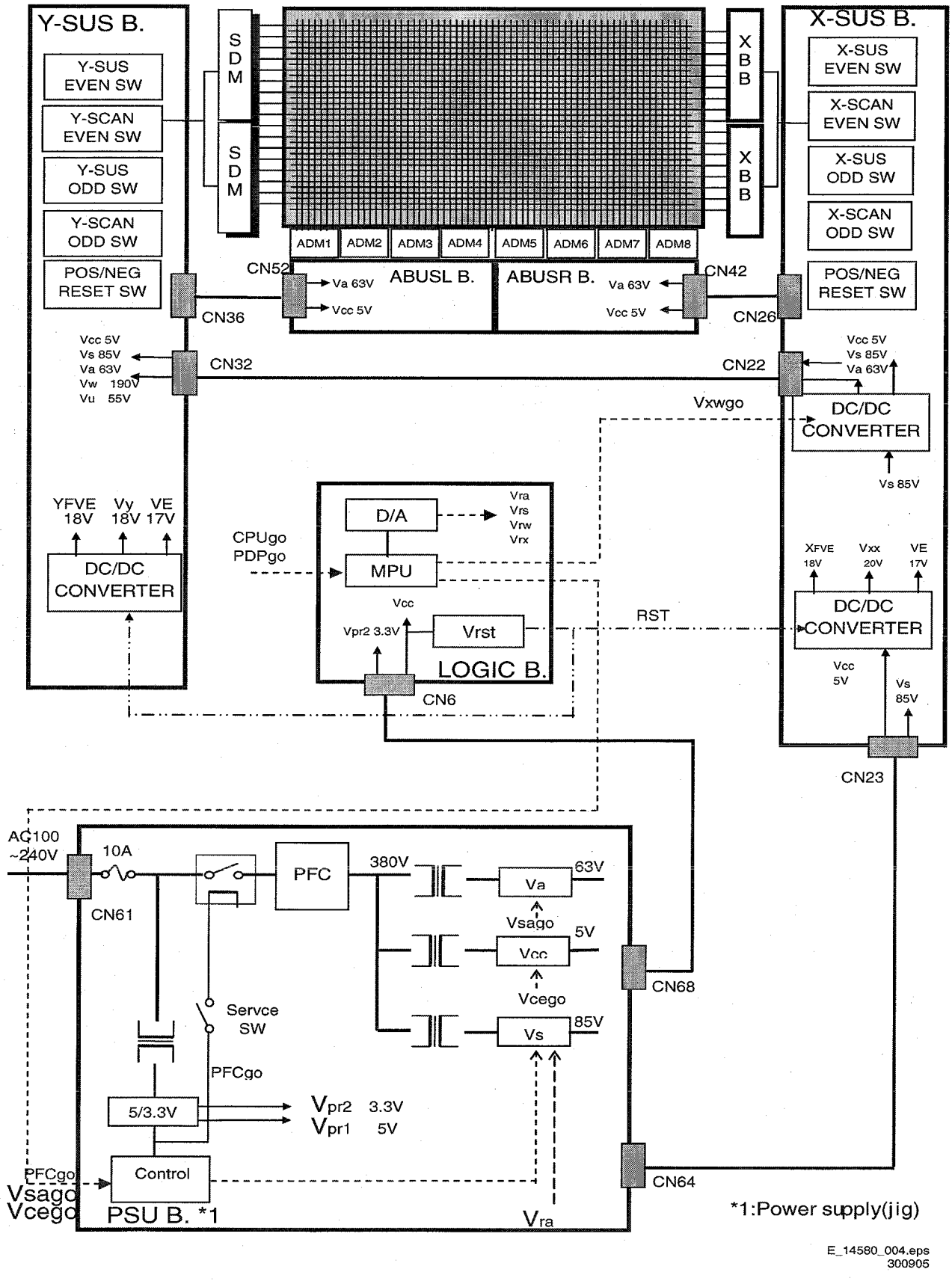

Figure 6-2 Power block diagram

6.2 Test Points

Not available.

6.3 Wave Forms

Not available.

7. Circuit Diagrams and PWB Layouts

Not applicable.

8. Alignments

Index of this chapter:
8.1 Voltage Setting Procedure

8.1 Voltage Setting Procedure

On the back of the PDP, in the top right hand corner, you find the Voltage Setting label:

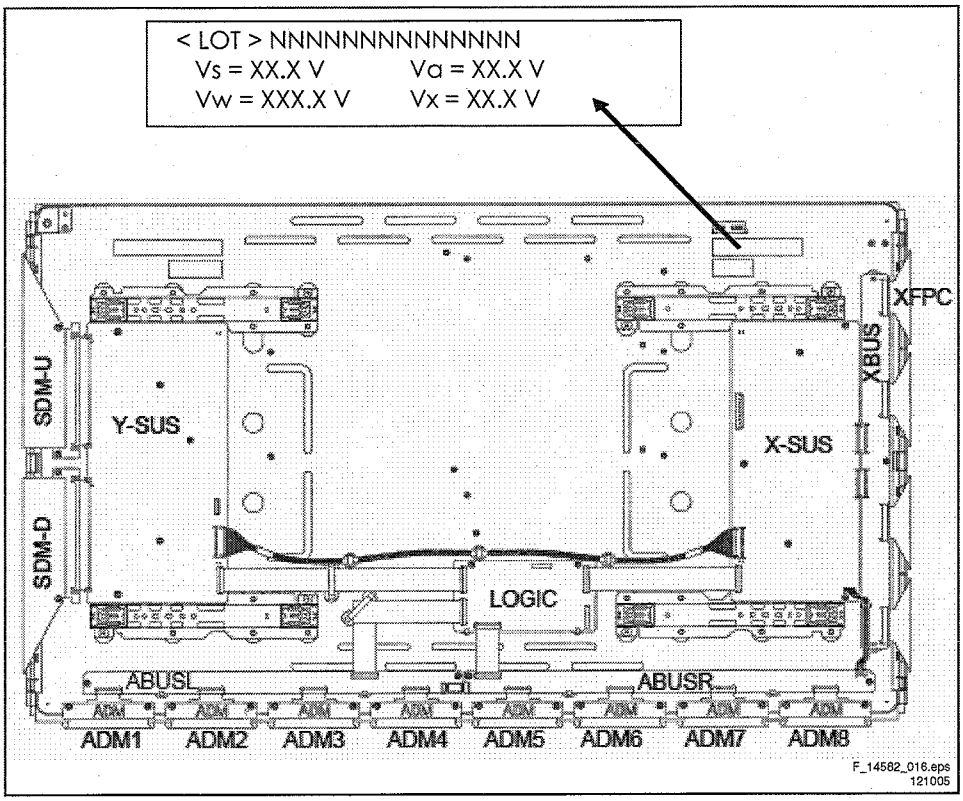

Figure 8-1 Voltage setting label

This Voltage Setting label shows the following messages:

Table 8-1

Item	Adjustment items	Measurement point	Adjustment value (conditions)
1	Vs voltage adjustment	PSU board F241 or CN392 test points	Voltage setting label indication value* ± 1% (all black)
2	Va voltage adjustment	PSU board F240 or CN392 test points	Voltage setting label indication value* ± 1% (all black)
3	Vw voltage adjustment	X-SUS board connector CN26 6-pin	Voltage setting label indication value* ± 1% (all black)
4	Vx voltage adjustment	X-SUS board connector CN26 1-pin	Voltage setting label indication value* ± 1% (all black)

If the voltage adjustments Vs and Va on the Power Supply Unit must be performed, depends on the version of the Power Supply Unit (see table 8-2).

Table 8-2

	PSU version 3	PSU v3 with precision R's	PSU version 4
PDP with Vs feedback (-52 PDP)	Feedback loop 'OFF', alignment is necessary	Feedback loop 'ON', alignment (check) is necessary (see voltage setting label)	Feedback loop 'ON', no alignment necessary
PDP with Vs/Va feedback (with 'B' in serial number)	Feedback loop 'OFF', alignment is necessary	Feedback loop 'ON', no alignment (check) necessary	Feedback loop 'ON', no alignment necessary

This table also shows if the Vs and Va control loop must be switched ON or OFF.
The voltage adjustments Vw and Vx are done automatically via ComPair. After exchange of the Logic Board, click on 'Ship out'. The settings from the old Logic Board will be restored in the new Logic Board.

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

9.1 Board Function Description
9.2 List of Abbreviations

9.1 Board Function Description

9.1.1 Logic Board Function

Data Processor

- (γ adjustment (1 / 2.2 / 2.4 / 2.6 / 2.8).
- NTSC/EBU format (Colour matrix) Switch.
- RGB gain Control (White balance adjustment, amplitude limitation).
- Error diffusion technology (grey scale adjustment).
- Dither (grey scale adjustment).
- Burn-in pattern generation.

Data Converter

- Quasi out-line adjustment (luminous pattern control).

Scan Controller

- Address driver control signal generator (ADM).
- Scan driver control signal generator (SDM).
- X/Y sustain control signal generator.

Waveform ROM

- Waveform pattern for drive / timing memory.

MPU

- Synchronous detection.
- System control.
- Driving voltage (Va, Vs, Vr, Vw) minute adjustment.
- Abnormal watch (breakdown detection) / abnormal processing.
- I_s (sustain) current control (sustain pulse control).
- I_a (address) current control (sub-field control).
- External communication control.
- Flash memory (firmware).

EEPROM

- Control parameter memory.
- The accumulation energizing time (every hour).
- Abnormal status memory (16 careers).

9.1.2 Function of X-SUS Board

DC/DC power supply block

- Vs (+60V), Vw (+185V), Vx (+45V).
- Vcc (+5V), XFvcc (+5V, floating), XFve (+18V, floating), Ve (+17V), Vb(-5V).

X Switching Block

- Switching during address period.
- Switching during sustain period.
- Switching during reset period.

Current Detector Block

- I_sx (sustain) current detection.

9.1.3 Function of Y-SUS Board

DC/DC Power Supply Block

- Vcc (+5V) -> Y Fvcc (+5V, floating)/Y Fve (+ 18V, floating)/ Ve (+ 17V)

Switching Block

- Switching during address period.
- Switching during sustain period.
- Switching during reset period.

Current Detector Block

- I_sy (sustain) current detection.
- I_sp (SDM) current detection.

9.1.4 Function of PSU Board

Stand-by Power Supply Block

- AC100-240: +5V & +3V3 Stand-by.

PFC Block (AD/DC Power Supply Block)

- AC100-240: +390V.

AD/DC Power Supply Block

- +380V, Vcc (+5V), Vs (+80V), Va (+60V).

Current Detection Block

- I_a (address) current detection.

Abnormal Voltage Monitoring

- Vs excess voltage monitoring.
- Va excess voltage monitoring.

9.2 List of Abbreviations

ADM	Address module
Burn-in rack	Test equipment of the shelf test in which the PDP unit is left to stand in drive condition
CPU	The unit for controlling the circuit operation
DOXE	The control voltage for even-numbered lines in the X direction
DOXO	The control voltage for odd-numbered lines in the X direction
DOYSD	Used in the drive voltage in the Y direction (down)
DOYSU	Used in the drive voltage in the Y direction (up)
External power ON	Running the external powers (Vcc, Va, Vs) on the designated voltage. Unless otherwise specified
External power OFF	Making the external powers (Vcc, Va, Vs) to stop their operation completely. Unless otherwise specified
Flexible cable	The cable to connect the electric circuit to the panel
Flicker	Continuous switching between bright and dark views by the PDP itself
Gradation	Shading of the display colour
OPUMP	The name of a circuit where the current from X/YSUS is returned
Oscilloscope	A device that allows the flow and strength of the running current to be visually checked and measured
Panel	The indication part of the plasma display panel (PDP)
Panel voltage	The voltage required operating the PDP normally
Parts	Each PC board and parts mounted in the PC boards
PDP	Plasma display panel abbreviated
Probe	A cable with contact finger that can transfer the status of the electric circuit to be measured to an oscilloscope
Protection cover	A cover made of aluminium to protect the PDP entirely during test
ROM	Memory that stores the drive sequence and other data
SDM	Scan module
SUS	XSUS or YSUS
Tapping	Light impact
Unit of COM	The unit of circuits connected to the panel with flexible cable (YCOM UP/DOWN, XBUS UP/DOWN, address sections, the unit of PC boards in ACOM 1 to 5).
Va	The power supply at 60 V, which is used to write data on the panel
Vcc	The power supply at 5 V, which is used to operate the logic section mainly
Vs	The power supply ranging from 127 V to 180 V, which is used to maintain display data. In addition, this can serve as the primary side for the secondary voltage (Vw, -Vy, Vsc)
White solid	A condition when the screen display is entirely white
XSUS	The name of the circuit that controls the panel operation in the X direction
YCOM	The circuit used to output a panel Y line selection signal and the voltage of a display data keep signal
YCOMDV	The name of the panel drives voltage signal output from YCOM UP/DOWN section
YSUS	The name of the circuit that controls the panel operation in the Y direction

10. Spare Parts List

For spare parts list see chapter 5

11. Revision List

Supplement on the following service manuals:

Table 11-1 Overview of chassis and manuals, covered by this manual

Display type	Model #	Chassis	Manual #
32" H1	32FD9944/01S	FM23 AA	312278513891
	32FD9944/69S	FM23 AA	312278513891
	32FD9954/17S	FM23 AA	312278513891
	32FD9954/69S	FM23 AA	312278513891
	32HF9964/12Z	FM23 AA	312278513891
	32HF9964/22Z	FM23 AA	312278513891
	32PF9964/12S	FM23 AA	312278513891
	32PF9965/12S	F22RE AA	312278513171
32" H2	32FD9944/01S	FM23 AA	312278513891
	32FD9944/69S	FM23 AA	312278513891
	32FD9954/17S	FM23 AA	312278513891
	32FD9954/69S	FM23 AA	312278513891
37" H2	420P10/00	FTV1.9DE AA	312278510170
	42FD9932/01G	FTV1.9DE AA	312278510170
	42FD9932/01S	FTV1.9DE AA	312278510170
	42FD9932/17G	FTV1.9DE AA	312278510170
	42FD9932/69G	FTV1.9DE AA	312278510170
	42FD9932/69S	FTV1.9DE AA	312278510170
	42PF9952/12S	FTV1.9DE AA	312278510170
	42PF9952/19S	FTV1.9DE AA	312278510170
	42PF9952/32S	FTV1.9DE AA	312278510170
	42PF9952/39S	FTV1.9DE AA	312278510170
	42PF9952/58S	FTV1.9DE AA	312278510170
37" A1	Information not available		
42" H1	420P30/00	FM23 AA	312278513891
	42FD9934/17S	FM24 AA	312278513891
	42FD9934/69S	FM24 AA	312278513891
	42FD9944/01S	FM24 AA	312278513891
	42FD9944/69S	FM24 AA	312278513891
	42FD9954/17S	FM24 AA	312278513891
	42FD9954/69S	FM24 AA	312278513891
42" H2	42FD9934/17S	FM24 AA	312278513891
	42FD9934/69C	FM24 AA	312278513891
	42FD9934/69S	FM24 AA	312278513891
	42FD9944/01S	FM24 AA	312278513891
	42FD9944/69S	FM24 AA	312278513891
	42FD9944/93S	FM24 AA	312278513891
	42FD9954/17S	FM24 AA	312278513891
	42FD9954/69C	FM24 AA	312278513891
	42FD9954/69S	FM24 AA	312278513891
	42FD9954/93S	FM24 AA	312278513891
	BDH4211/00	FM24 AB	312278513891
	BDH4221/00	FM24 AB	312278513891
42" A1	42PF9956/37	FTP2.2U AA	312278514662
	42PF9966/12	FTP2.2E AA	312278514651
42" A2	42PF9966/10	FTP2.2E AA	312278514651
	42PF9966/12	FTP2.2E AA	312278514651
42" A3	42PF5620/10	LC4.9E AA	312278515431
	42PF7520D/79	LC4.3A AB	312278515360
	42PF9967D/10	FTP2.4E AB	312278515740

11.1 Service Manual 3122 785 1458.1

The code numbers of X-SUS and Y-SUS boards in table of chapter 5.3 are corrected.

11.2 Service Manual 3122 785 1458.2

New display types added (A1, A2, and A3).

Colour Television

Module

FHP PDP Repair Manual

FPF42C128135UA-52 (42" A4)

Service
Service
Service

ServiceManual

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PHILIPS

1. Technical Specifications

Index of this chapter:

1.1 Specifications
1.2 Serial Numbers
1.3 Chassis overview

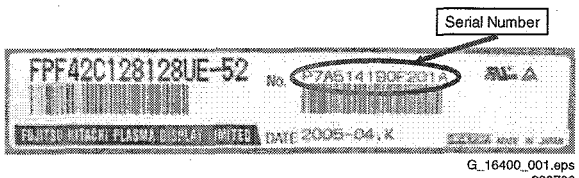
1.1 Specifications

1.1.1 42" A4

No	Item	Spec. FPF42C128135UA-52
1	Resolution	1024 (H) x 1080 (V) pixels (1 pixel = 1 R,G,B cells)
2	Number of Cells	3072 (H) x 1080 (V)
3	Pixel Pitch	0.90 mm (H) x 0.485 mm (V)
4	Cell Pitch	0.30 mm (H) x 0.485 mm (V)
5	Display size	921.60 (H) x 523.8 mm (V)
6	Screen size	Diagonal 42"
7	Screen aspect	16:9
8	Dimensions	994 (W) x 587 (H) x 66 (D) mm
9	Weight	About 16 kg
10	H sync, V sync, data	50 kHz (H), 50/60/70 Hz (V), LVDS

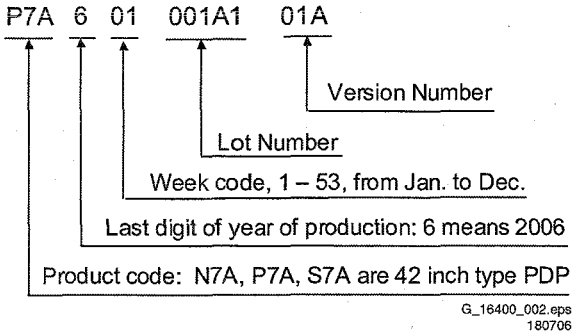
1.2 Serial Numbers

Check the serial ID number of the product requested for repair, before starting the problem analysis and repair.



G_16400_001.eps
280706

Figure 1-1 PDP Serial number


P7A 6 01 001A1 01A
Version Number
Lot Number
Week code, 1 – 53, from Jan. to Dec.
Last digit of year of production: 6 means 2006
Product code: N7A, P7A, S7A are 42 inch type PDP

G_16400_002.eps
180706

Figure 1-2 PDP Serial number explanation

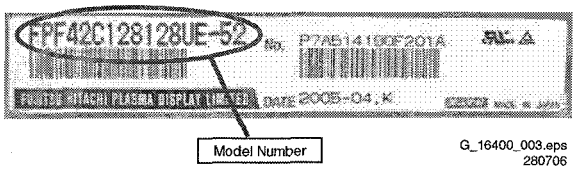


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Figure 1-3 PDP Model number

FPF42C128128UC -52 ····· 42A1 (covered)
FPF42C128128UD -52 ····· 42A2 (by manual)
FPF42C128128UE -52 ····· 42A3 (3122 785 14580)
FPF42C128135UA -52 ····· 42A4 (in this manual)

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Figure 1-4 List of model numbers

Note: The PDP serial number and the serial number of the completed chassis (product requested for repair) are usually the same when the product is brought in for repair the first time.

1.3 Chassis overview

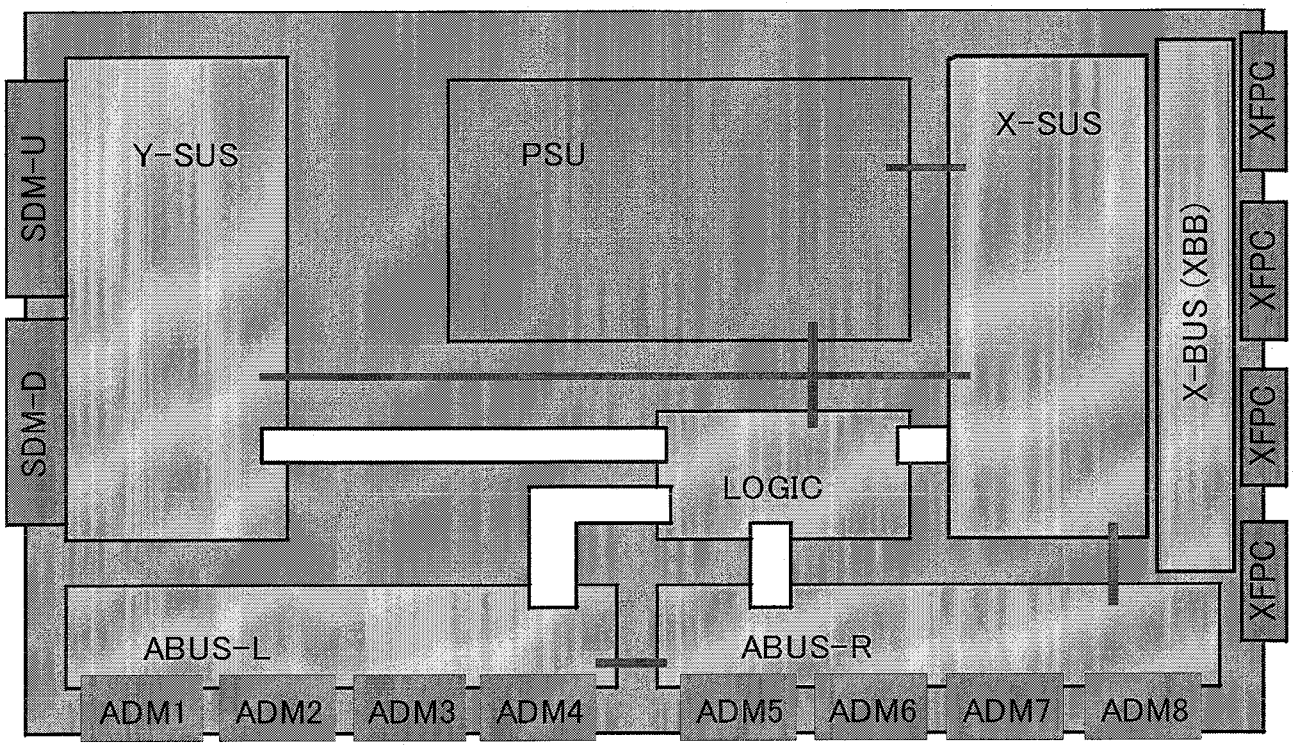

Figure 1-5 PWB locations

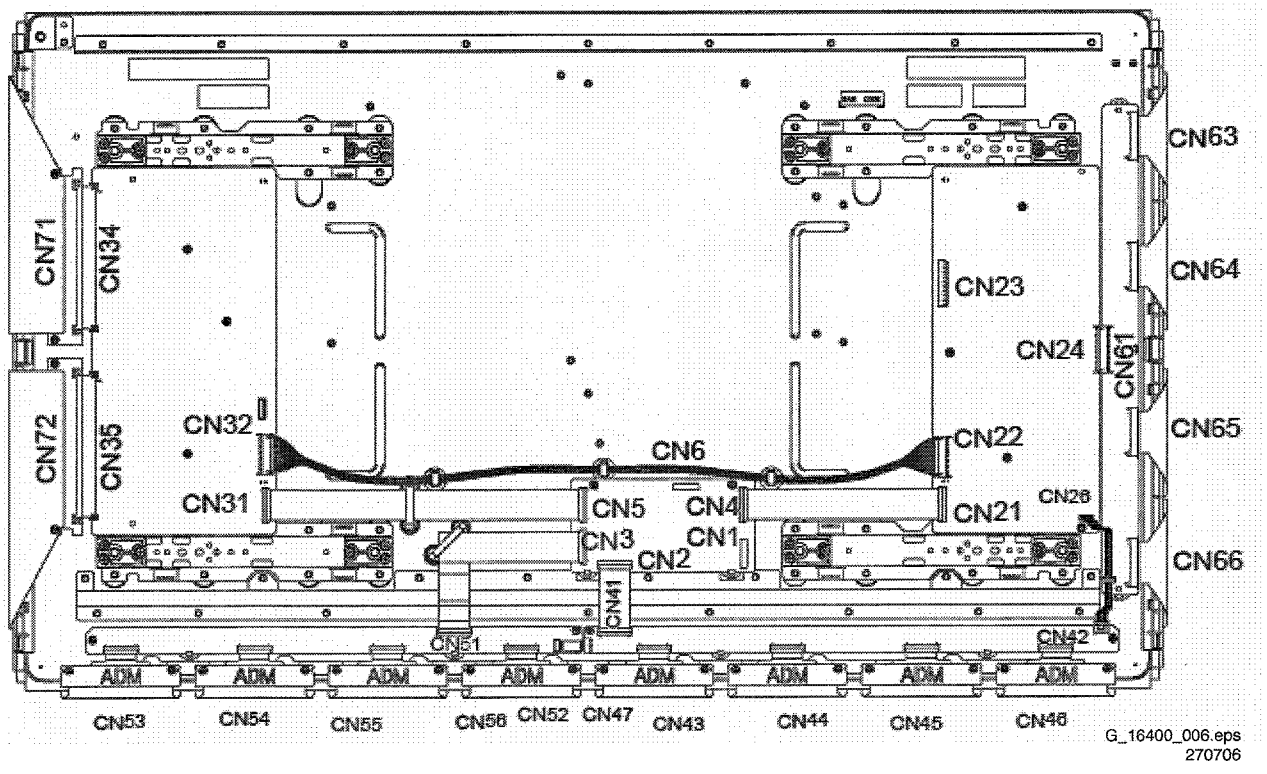

Figure 1-6 Connector positions

1.4 Some connector layouts

Pin No.	Signal name	Pin No.	Signal name
1	RA-	2	GND (LVDS)
3	RA+	4	SCL
5	RB-	6	GND
7	RB+	8	SDA
9	RC-	10	GND (LVDS)
11	RC+	12	CPUGO
13	RXCLKIN-	14	PDPGO
15	RXCLKIN+	16	IRQ
17	RD-	18	PDWN
19	RD+	20	GND (LVDS)
21	RE-	22	GND
23	RE+	24	GND
25	GND	26	GND
27	GND	28	GND
29	GND	30	GND

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Figure 1-7 LVDS connector CN1 Logic Board

Pin No.	Symbol
1	Vcc
2	GND
3	Vpr2
4	GND
5	Vra
6	Vrs
7	VCEGO
8	VSAGO
9	PFCGO

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270706

Figure 1-8 Power supply connector CN6 Logic Board

Pin No.	Symbol
1	Va
2	N.C.
3	Vcc
4	GND
5	GND
6	GND
7	N.C.
8	Vs
9	Vs
10	Vs

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270706

Figure 1-9 Power supply connector CN23 X-SUS Board

2. Safety Instructions, Warnings, and Notes

2.1 Safety Instructions ⚠

It is not allowed to operate the FTV-set without glass plate. One function of this glass plate is to absorb Infrared Radiation. Without this glass plate the level of Infrared Radiation produced by the plasma display could damage your eyes.

1. Safety regulations require that during a repair:
   - the set should be connected to the mains via an isolating transformer (in this particular case a transformer of ≥ 800 VA).
   - safety components, indicated by the symbol ⚠, should be replaced by components identical to the original ones.
2. Safety regulations require that after a repair the set must be returned in its original condition. In particular attention should be paid to the following points.
   - Note: The wire trees should be routed correctly and fixed with the mounted cable clamps.
   - The insulation of the mains lead should be checked for external damage.
   - The electrical DC resistance between the mains plug and the secondary side should be checked (only for sets that have a mains isolated power supply). This check can be done as follows:
     - unplug the mains cord and connect a wire between the two pins of the mains plug;
     - set the mains switch to the on position (keep the mains cord unplugged!);
     - measure the resistance value between the pins of the mains plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ;
     - switch off the TV and remove the wire between the two pins of the mains plug.
   - The cabinet should be checked for defects to avoid touching of any inner parts by the customer.

2.2 Warnings

ESD

All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.

1. Available ESD protection equipment:
   - complete kit ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
   - wristband tester 4822 344 13999
2. Never replace modules or other components while the unit is switched on.
3. When making settings, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

2.3 Notes

1. A glass plate is positioned before the plasma display. This glass plate can be cleaned with a slightly humid cloth. If due to circumstances there is some dirt between the glass plate and the plasma display panel it is recommended to do some maintenance by a qualified service employee only.
2. Never disconnect the power display cable when the set is operating
3. With DST no failures (error-codes) can be red, when the set is in Service-mode.
4. If DST reacts with "error 2", there is no communication between the TV and the DST. Note that the IR-transmitter LED is positioned at the right side of IR-receiver eye of the E-box. Take into account that receiver-LED on DST is positioned not in the middle but at the left side. Point corresponding LEDs to each other. In case the amount of Infrared produced by the screen pollutes the communication, the set can be set in Stand-by-mode. Then still the error-messages can be retrieved.

2.3.1 Notes on Safe Handling of the Plasma Display

Notes to Follow During Service

- The work procedures shown with the Note indication are important for ensuring the safety of the product and the servicing work. Be sure to follow these instructions.
- Before starting the work, secure a sufficient working space.
- At all times other than when adjusting and checking the product, be sure to turn OFF the main POWER switch and disconnect the power cable from the power supply of the display during servicing.
- To prevent electric shock and breakage of PC board, start the servicing work at least 30 seconds after the main power has been turned off. Especially when installing and removing the power supply PC board and the SUS PC board in which high voltages are applied, start servicing at least 2 minutes after the main power has been turned off.
- While the main power is on, do not touch any parts or circuits other than the ones specified. The high voltage power supply block within the PDP module has a floating ground. If any connection other than the one specified is made between the measuring equipment and the high voltage power supply block, it can result in electric shock or activation of the leakage-detection circuit breaker.
- When installing the PDP module in, and removing it from the packing carton, be sure to have at least two persons perform the work white being careful to ensure that the flexible printed-circuit cable of the PDP module does not get caught by the packing carton.
- When the surface of the panel comes into contact with the cushioning materials, be sure to confirm that there is no foreign matter on top of the cushioning materials before the surface of the panel comes into contact with the cushioning materials. Failure to observe this precaution may result in, the surface of the panel being scratched by foreign matter.
- When handling the circuit PC board, be sure to remove static electricity from your body before handling the circuit PC board.
- Be sure to handle the circuit PC board by holding the large parts as the heat sink or transformer. Failure to observe this precaution may result in the occurrence of an abnormality in the soldered areas.
- Do not stack the circuit PC boards. Failure to observe this precaution may result in problems resulting from scratches on the parts, the deformation of parts, and short-circuits due to residual electric charge.
- Routing of the wires and fixing them in position must be done in accordance with the original routing and fixing configuration when servicing is completed. All the wires are routed far away from the areas that become hot (such as the heat sink). These wires are fixed in position with the wire clamps so that the wires do not move, thereby ensuring that they are not damaged and their materials do not deteriorate over long periods of time. Therefore, route the cables and fix the cables to the original position and states using the wire clamps.
- Perform a safety check when servicing is completed. Verify that the peripherals of the serviced points have not undergone any deterioration during servicing. Also verify that the screws, parts and cables removed for servicing purposes have all been returned to their proper locations in accordance with the original setup

3. Directions for Use

Not applicable.

4. Mechanical Instructions

Notes:
- Figures below can deviate from the actual situation, due to different set executions.
- For more detailed instructions regarding the (dis)assembly of the TV chassis that hold these PDPs, read the corresponding TV Service Manual.

4.1 Board Swap Instructions

4.1.1 General

Before dismounting panels read notes below!

Caution when removing circuit board!
When removing the circuit board after the main power is turned on/off, wait for at least one minute before starting to remove the circuit board.
If the circuit board removal is started immediately after turning off the main power, it can result in electric shock or damage to the circuit due to residual electric charge.

Caution on handling the FPC connector!
To release the black lock lever of the connector, flip it up gently in the middle with the nail of the thumb or forefinger, from the side with the cable.
Never pinch the lock lever with fingers or tools. Doing so might damage the lock lever.

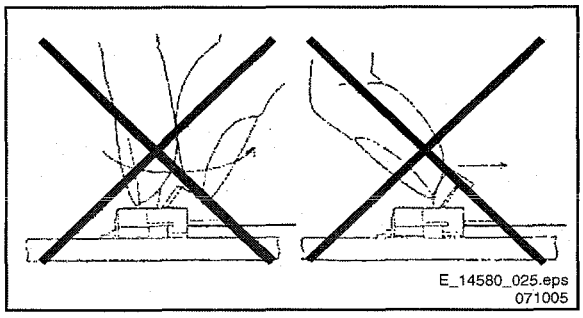

Figure 4-1 Handling the FPC connector

5. Release the white stand-offs [5] from the X-SUS board,

4.1.2 X-SUS and X-BUS Circuit Boards

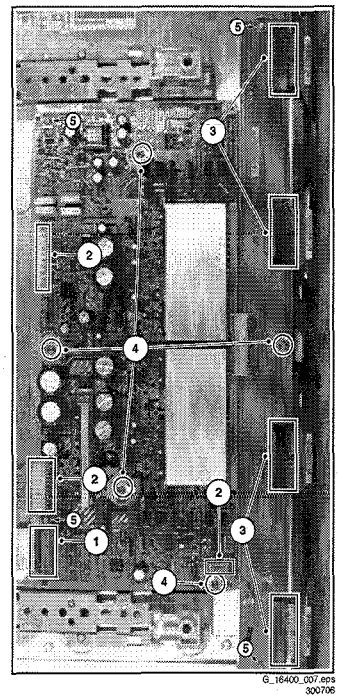

Figure 4-2 X-BUS and X-SUS board removal (1/2)

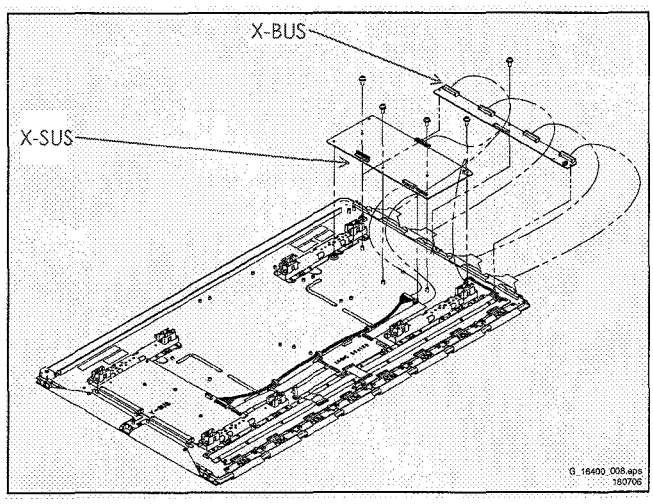

Figure 4-3 X-BUS and X-SUS board removal (2/2)

Remove the circuit boards by following the steps below. To install the circuit boards, reverse the removal procedure.
1. Release the lock of the FPC connector [1] and unplug the signal cable.
2. Unplug the connectors [2].
3. Unplug the 4 XFPC's [3] on the X-BUS board.
4. Remove the fixing screws [4].
   and from the top and bottom of the X-BUS board.

6. Remove the X-BUS board and the X-SUS board together.

Make sure that you do not touch the heat sink when removing the Y-SUS board.

4.1.3 Y-SUS Circuit Board

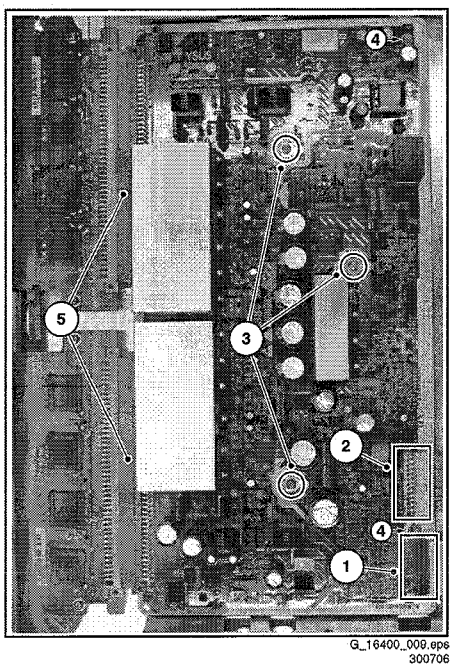

Figure 4-4 Y-SUS board removal (1/2)

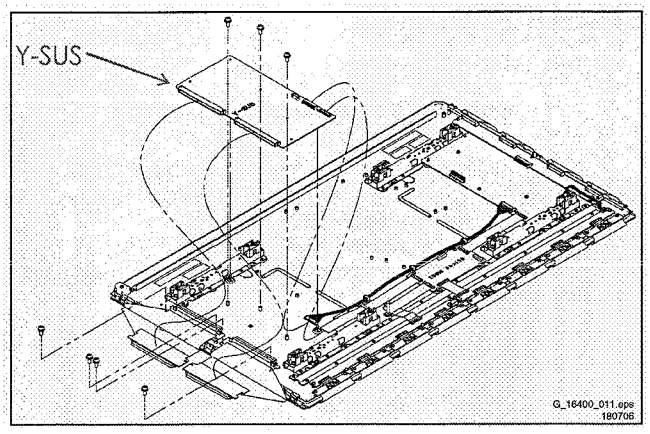

Figure 4-5 Y-SUS board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Release the lock of the FPC connector [1] and unplug the signal cable.
2. Unplug the connector [2].
3. Remove the fixing screws [3].
4. Release the white stand-offs [4] from the Y-SUS board.
5. Pull out the Y-SUS board horizontally, in this way unplugging the connectors [5].
6. Remove the Y-SUS board.

Make sure that you do not touch the heat sink when removing the Y-SUS board.
Note: Make sure the radiation plate is positioned correctly. It is located underneath the upper SDM, and the threaded bush should sit in the hole of the radiation plate.

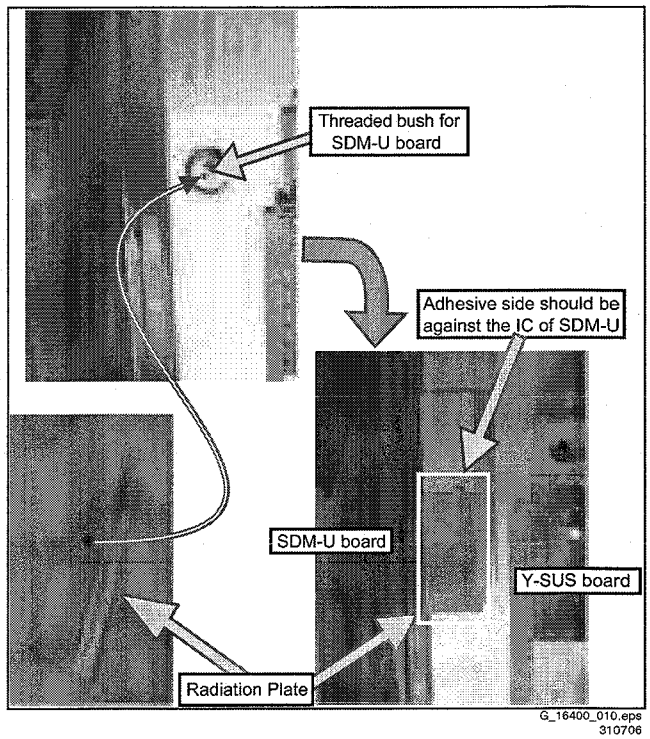

Figure 4-6 Radiation plate position

4.1.4 ABUS-L Circuit Board

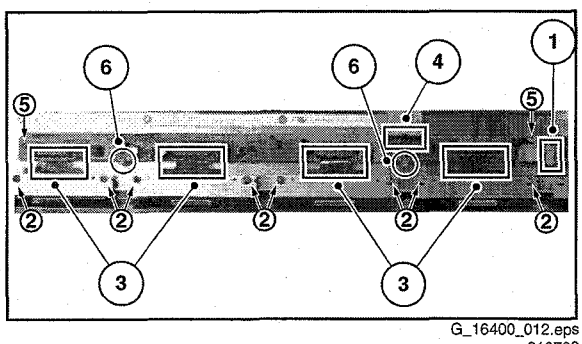

Figure 4-7 ABUS-L board removal (1/2)

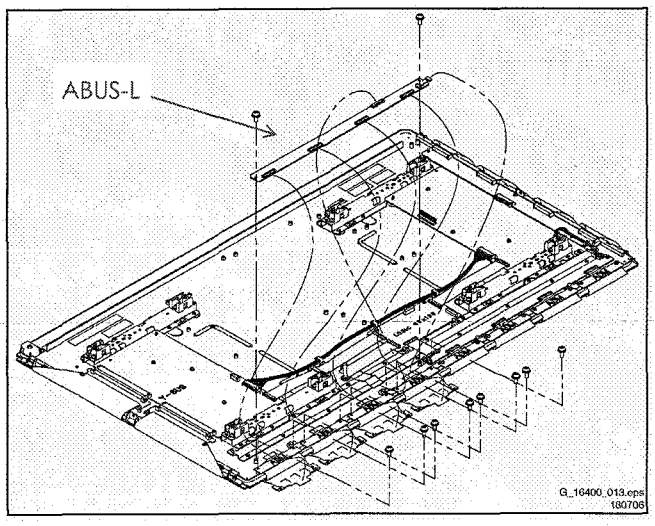

Figure 4-8 ABUS-L board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug the connector [1].
2. Remove the screws [2] fixing the ADMs.
3. Release the lock of the FPC connectors [3], and remove the ADM flexible board.
4. Release the lock of the FPC connector [4] and unplug the signal cable.
5. Remove the screws [5] fixing the ABUS-L board.
6. Remove the ABUS-L board.
7. When installing the ABUS-L board, put the board in such a position that it is locked by the tabs [6] before fixing it with the screws.

4.1.5 ABUS-R Circuit Board

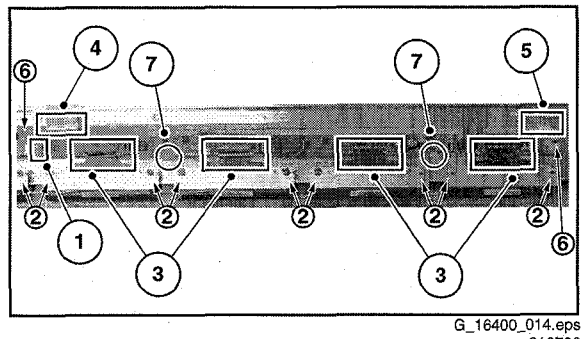

Figure 4-9 ABUS-R board removal (1/2)

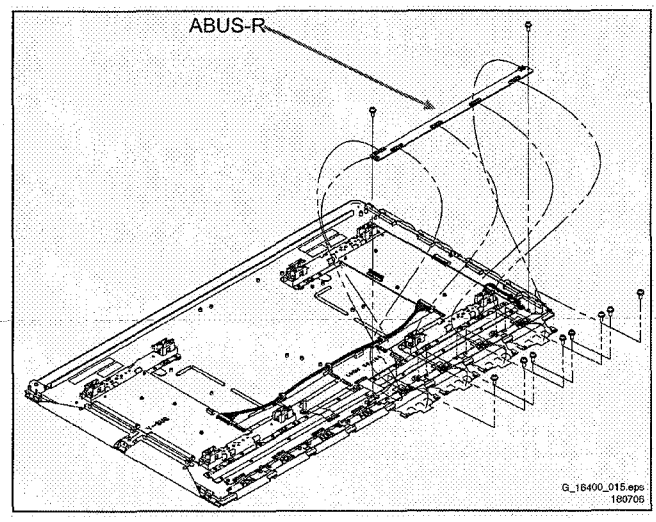

Figure 4-10 ABUS-R board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug the connector [1].
2. Remove the screws [2] fixing the ADMs.
3. Release the lock of the FPC connectors [3], and remove the ADM flexible board.
4. Release the lock of the FPC connector [4] and unplug the signal cable.
5. Unplug the connector [5].
6. Remove the screws [6] fixing the ABUS-R board.
7. Remove the ABUS-R board.
8. When installing the ABUS-R board, put the board in such a position that it is locked by the tabs [7] before fixing it with the screws.

4.1.6 LOGIC Board

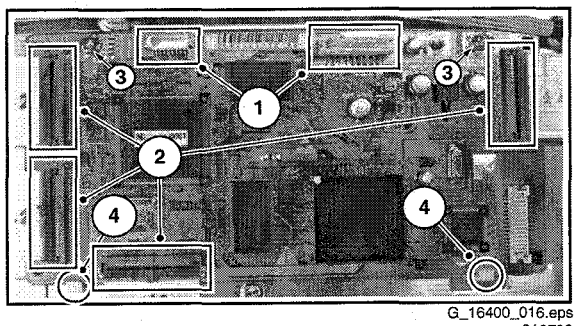

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Figure 4-11 LOGIC board removal (1/2)

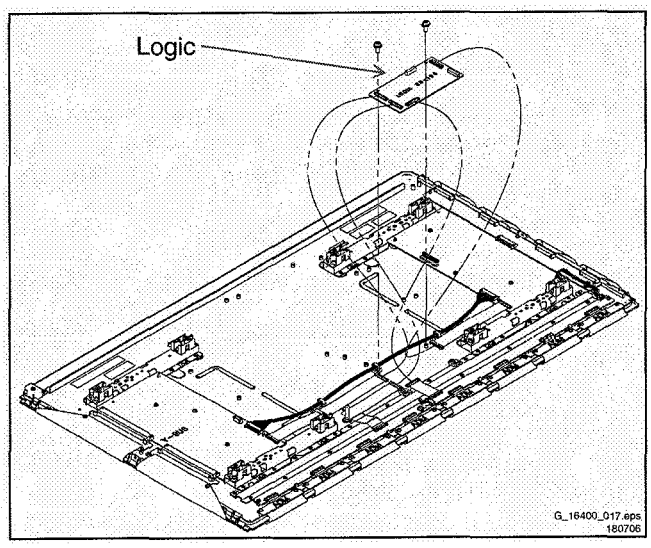

Figure 4-12 LOGIC board removal (2/2)

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug connectors [1].
2. Release the lock of the FPC connectors [2] and unplug the signal cables.
3. Remove the screws [3] fixing the LOGIC board.
4. Remove the LOGIC board.
5. When installing the LOGIC board, put the board in such a position that it is locked by the tabs [4] before fixing it with the screws.

4.1.7 PSU Board

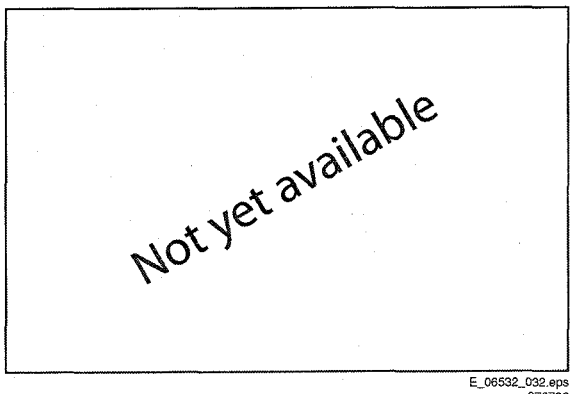

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Figure 4-13 PSU board removal

Remove the circuit board by following the steps below. To install the circuit board, reverse the removal procedure.

1. Unplug connectors [1].
2. Remove screws [2].
3. Remove the PSU.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

5.1 Repair Tools
5.3 Process Flow
5.4 Repair Instructions
5.5 Defect Description Form

5.1 Repair Tools

To be able to repair the Plasma Display Panels on board level, the following repair tools are available:

- Special LVDS cable: T.B.D.
- Foam buffers: 3122 785 90581.

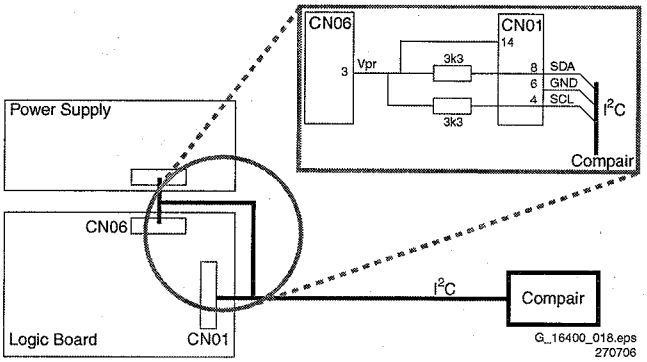

Figure 5-1 Extension cable kit ALiS PDP

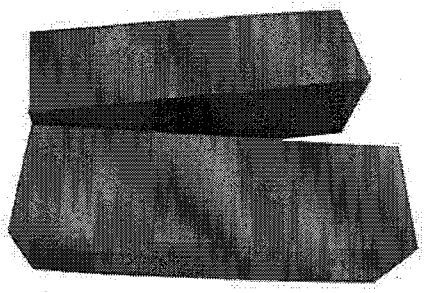

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Figure 5-2 Foam buffers for FTV

5.2 Error codes

When an error causes the PDP to switch "OFF", an error code is put into an EEPROM on the Logic Board. You can read out the contents of the error code memory with the ComPair tool.

5.2.1 How to Connect the ComPair Tool

- Carefully disconnect the LVDS cable from CN01 on the Logic Board.
- If necessary connect a PSU with a voltage of 3.3V to drive the LOGIC board.
- Connect the cable from the ComPair tool to connector CN01 of the LOGIC board.
- Turn on the ComPair tool.
- Launch the ComPair software.
- Read out the error buffer.

5.2.2 Error Code Overview

Table 5-1 Error code table

Error code	Detected by board	Error description	Suspected board(s)			
21	X-SUS	Vxx power voltage is too high	X-SUS	LOGIC		
24		Vxx power voltage is too low	X-SUS	LOGIC		
25		Vex power voltage is too high	X-SUS			
26		Vex power startup is faulty	X-SUS	LOGIC		
44	Y-SUS	Vey power voltage is too low	Y-SUS	LOGIC		
45		Vey power voltage is too high	Y-SUS			
46		Vey power startup is faulty	Y-SUS	LOGIC		
4C		Temperature too high	Y-SUS	LOGIC		
61	X-SUS	Vs power voltage is too high	Y-SUS	X-SUS	LOGIC	PSU
62	Y-SUS	Vs power startup is faulty	X-SUS	Y-SUS	PSU	LOGIC
64		Ve power voltage is too low	LOGIC	X-SUS	Y-SUS	
65		Ve power voltage is too high	Y-SUS	Y-SUS		
66		Ve power startup is faulty	LOGIC	X-SUS	Y-SUS	
68		Vw power voltage is too low	Y-SUS	LOGIC		
69		Vw power voltage is too high	LOGIC	Y-SUS		
6A		Vw power startup is faulty	Y-SUS	LOGIC		
79		Vw power current is too high (during operation)	Y-SUS	X-SUS	LOGIC	
7B		Vs power voltage is too high (during startup)	Y-SUS	X-SUS	LOGIC	

5.3 Process Flow

The selected workshop receives the defect TV set and investigates the PDP. Two possible solutions follow:

5.3.1 Advanced PDP Exchange (Actual Way-of-Working)

In case of:
- Glass broken,
- Flex foil damaged,
- Y-COM IC on flex foil is damaged, or
- NVM on logic board defect: no communication with ComPair

the procedure for repair is as follows:
A new PDP will be ordered at EuroService. They issue an RMA number and ship a refurbished PDP from its swap pool in a flight case to the workshop. After receipt, the workshop sends the defective PDP, accompanied by a completely filled in Defect Description Form (see figure "Defect Description Form (DDF)"), in this flight case to EuroService. EuroService makes sure the defect PDP is repaired and afterwards added to its swap pool. The workshop makes the TV set complete by building in the refurbished PDP. Afterwards the TV set is returned to the customer.

5.3.2 Customized Repair

If the defect is not mentioned in 5.2.1, the workshop orders the necessary spare parts, being boards, at EuroService. After receipt the workshop swaps the concerning board and makes the TV set complete by building in the PDP. Afterwards the TV set is returned to the customer.

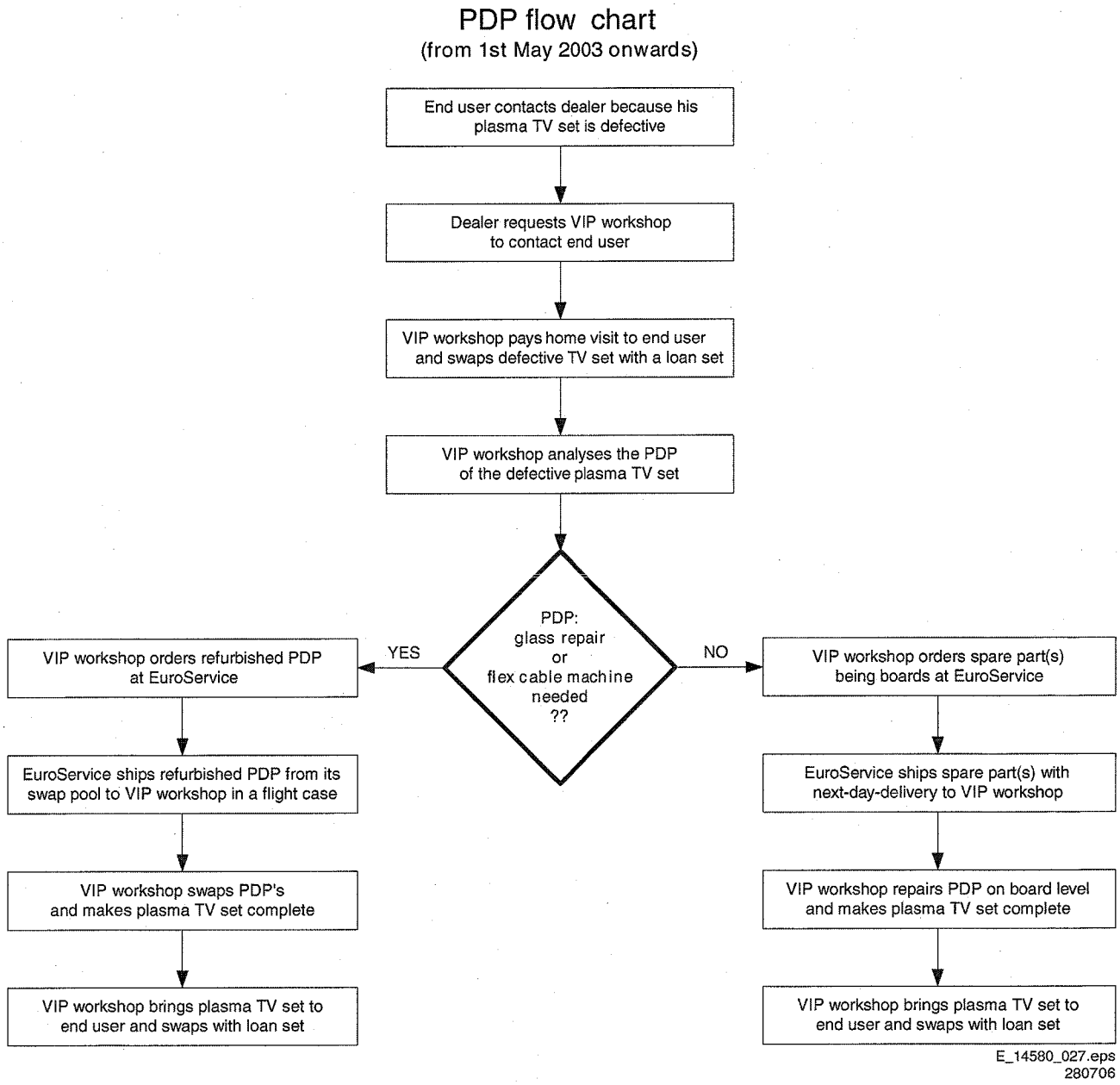
PDP flow chart
(from 1st May 2003 onwards)
End user contacts dealer because his plasma TV set is defective
Dealer requests VIP workshop to contact end user
VIP workshop pays home visit to end user and swaps defective TV set with a loan set
VIP workshop analyses the PDP of the defective plasma TV set
PDP: glass repair or flex cable machine needed ??
YES
NO
VIP workshop orders refurbished PDP at EuroService
EuroService ships refurbished PDP from its swap pool to VIP workshop in a flight case
VIP workshop swaps PDP's and makes plasma TV set complete
VIP workshop brings plasma TV set to end user and swaps with loan set
VIP workshop orders spare part(s) being boards at EuroService
EuroService ships spare part(s) with next-day-delivery to VIP workshop
VIP workshop repairs PDP on board level and makes plasma TV set complete
VIP workshop brings plasma TV set to end user and swaps with loan set
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Figure 5-3 PDP flow chart

5.4 Repair Instructions

5.4.1 General

In case of:
- a broken glass panel,
- a defective flex foil, or
- a defective Y-COM IC on the flex foil

the PDPs need to be send back via the central repair procedure of EuroService.

In other cases the Plasma Display Panels must be repaired on board level.

5.4.2 42" A4 ALiS Plasma Display Panel

The involved Plasma Display Panel is:

Display type	Service code number
FPF42C128135UA-52	9322 235 43682

The available modules for these Plasma Display Panels are:

Module description	FHP code number	Service code number
X-SUS board	FPF33R-XSS0041	9965 000 35647
Y-SUS board	FPF33R-YSS0042	9965 000 35648
Logic board	FPF33R-LGC0061	9965 000 35646
A-BUS Left	FPF33R-ABL0038	9965 000 35649
A-BUS Right	FPF33R-ABR0039	9965 000 35650
X-BUS board	FPF33R-XBU0035	9965 000 35651
Signal Cable LOGIC-X-SUS	FPF29R-CBL001411	9965 000 32669
Signal Cable LOGIC-Y-SUS	FPF29R-CBL001412	9965 000 32670
Signal Cable LOGIC-ABUS-L	FPF29R-CBL001401	9965 000 32668
Signal Cable LOGIC-ABUS-R	FPF29R-CBL001421	9965 000 32671
Power Cable X-SUS-Y-SUS	FPF29R-CBL003601	9965 000 32672
Power Cable X-SUS-ABUS-R	FPF29R-CBL003701	9965 000 32673

Remark:
1. If the LOGIC board is defective, the procedure mentioned in figures "Logic Board Exchange (1 and 2)" must be used.

5.4.3 Fault Finding Flowcharts

Problem analysis procedure: PDP repair / board swap

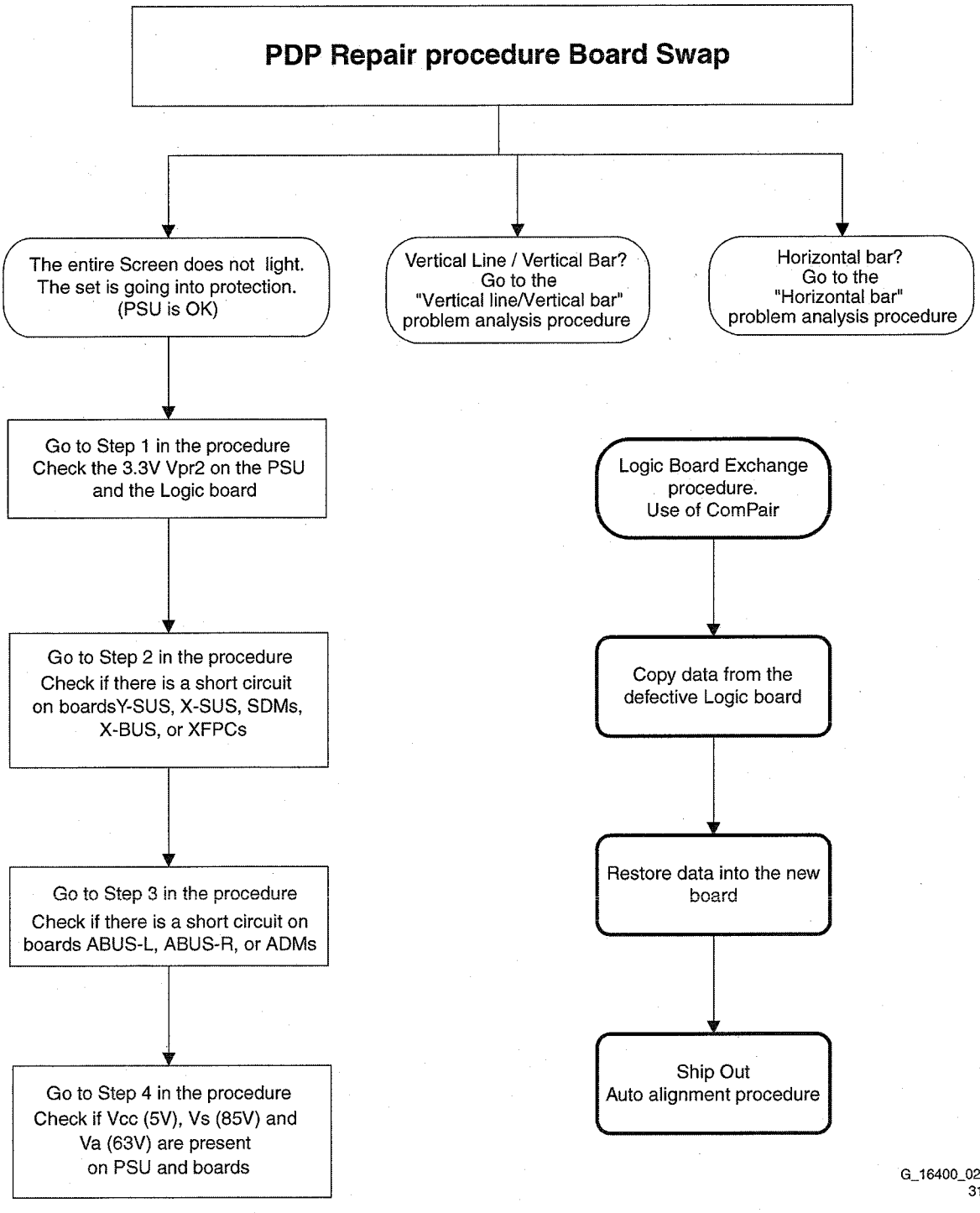
PDP Repair procedure Board Swap
The entire Screen does not light. The set is going into protection. (PSU is OK)
Vertical Line / Vertical Bar? Go to the "Vertical line/Vertical bar" problem analysis procedure
Horizontal bar? Go to the "Horizontal bar" problem analysis procedure
Go to Step 1 in the procedure Check the 3.3V Vpr2 on the PSU and the Logic board
Go to Step 2 in the procedure Check if there is a short circuit on boardsY-SUS, X-SUS, SDMs, X-BUS, or XFPCs
Go to Step 3 in the procedure Check if there is a short circuit on boards ABUS-L, ABUS-R, or ADMs
Go to Step 4 in the procedure Check if Vcc (5V), Vs (85V) and Va (63V) are present on PSU and boards
Logic Board Exchange procedure. Use of ComPair
Copy data from the defective Logic board
Restore data into the new board
Ship Out Auto alignment procedure
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Figure 5-4 Problem analysis procedure: PDP repair / board swap

Problem Analysis Procedure: The entire screen does not light

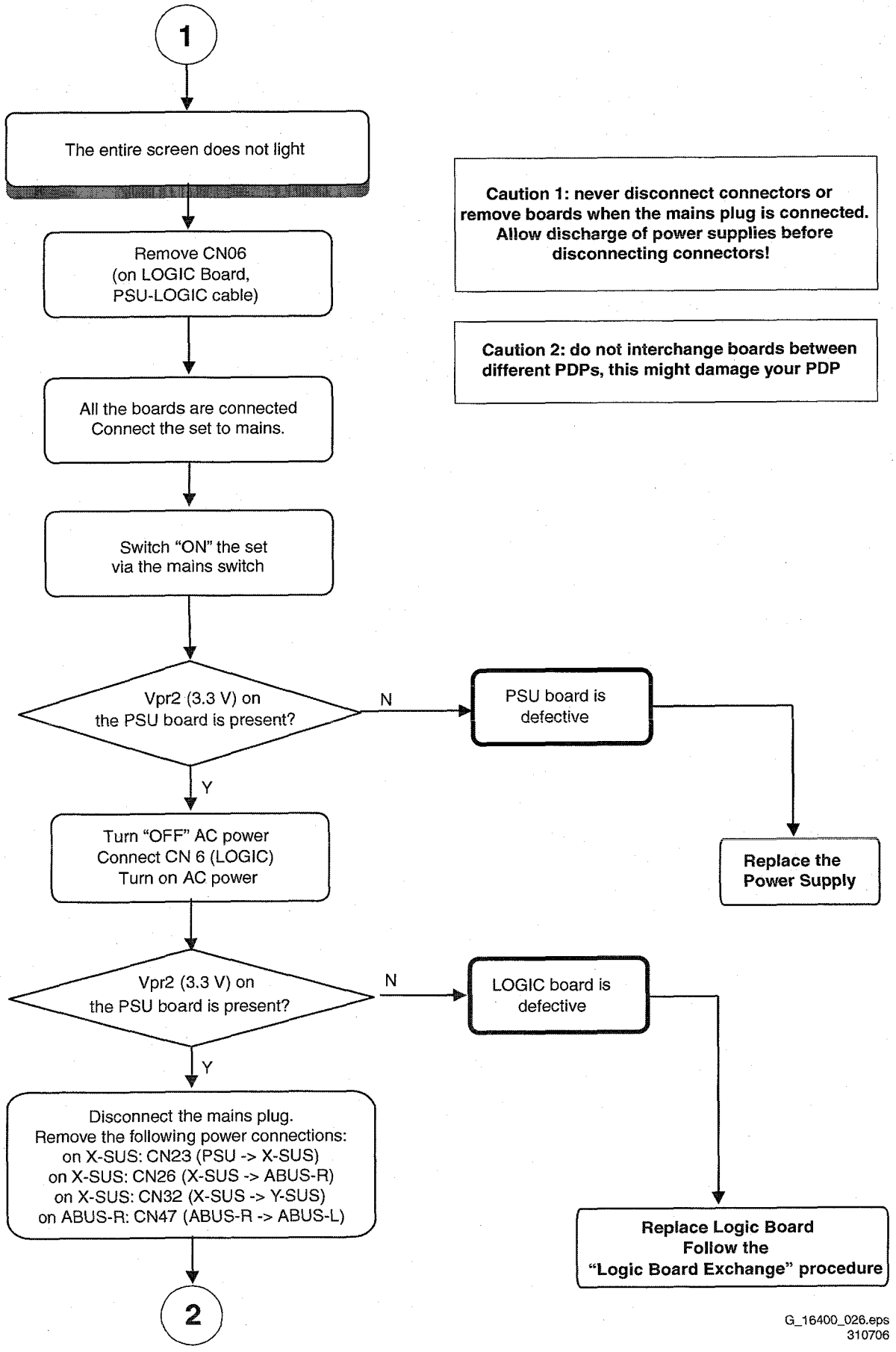
1
The entire screen does not light
Caution 1: never disconnect connectors or remove boards when the mains plug is connected. Allow discharge of power supplies before disconnecting connectors!
Remove CN06 (on LOGIC Board, PSU-LOGIC cable)
Caution 2: do not interchange boards between different PDPs, this might damage your PDP
All the boards are connected Connect the set to mains.
Switch "ON" the set via the mains switch
Vpr2 (3.3 V) on the PSU board is present?
N
PSU board is defective
Y
Turn "OFF" AC power Connect CN 6 (LOGIC) Turn on AC power
Replace the Power Supply
Vpr2 (3.3 V) on the PSU board is present?
N
LOGIC board is defective
Y
Disconnect the mains plug.
Remove the following power connections:
on X-SUS: CN23 (PSU -> X-SUS)
on X-SUS: CN26 (X-SUS -> ABUS-R)
on X-SUS: CN32 (X-SUS -> Y-SUS)
on ABUS-R: CN47 (ABUS-R -> ABUS-L)
Replace Logic Board Follow the "Logic Board Exchange" procedure
2
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Figure 5-5 Problem analysis procedure: the entire screen does not light

Short-circuit check on Boards and Power Supply Lines

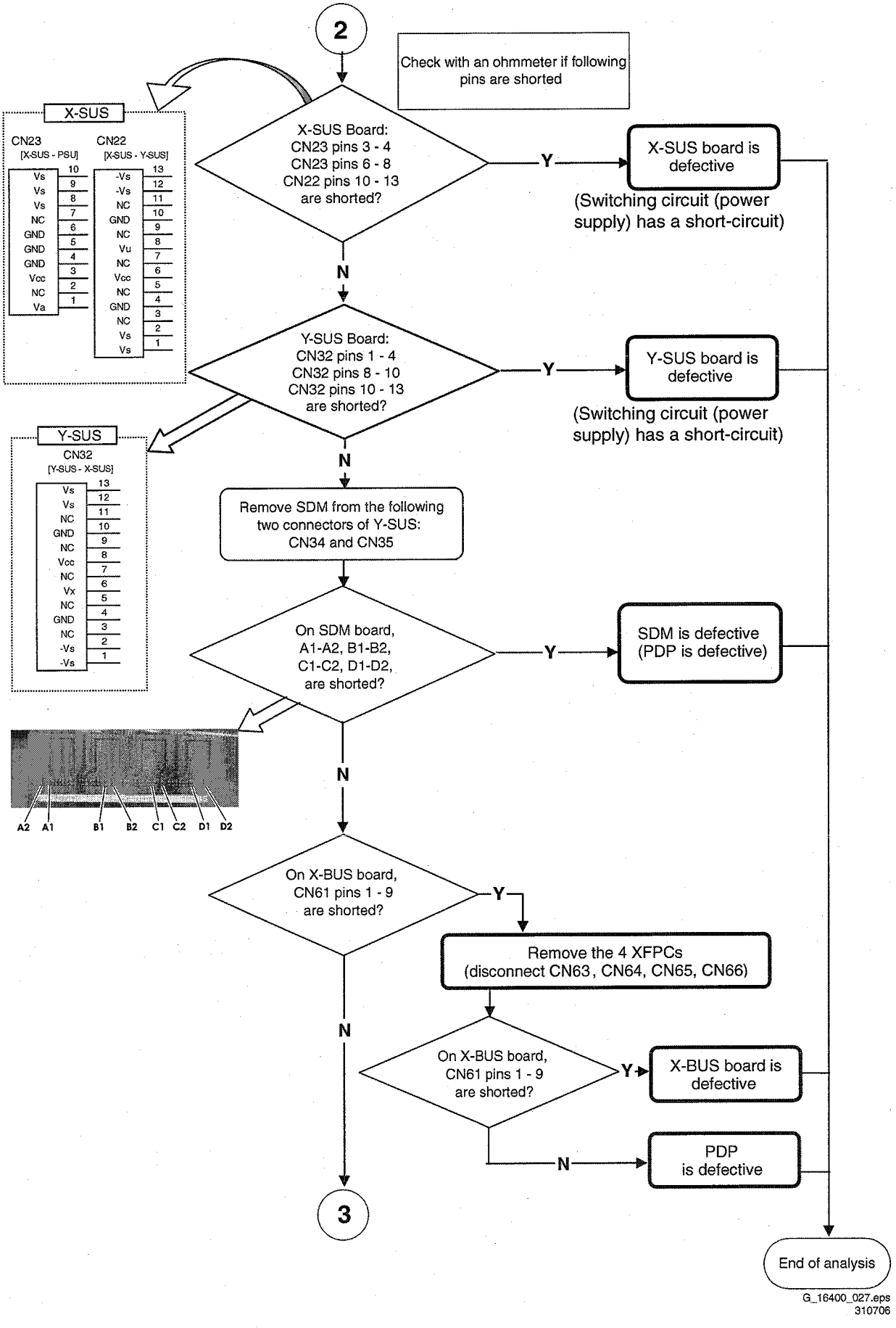

Figure 5-6 Short circuit check on boards and power supply lines (1/3)

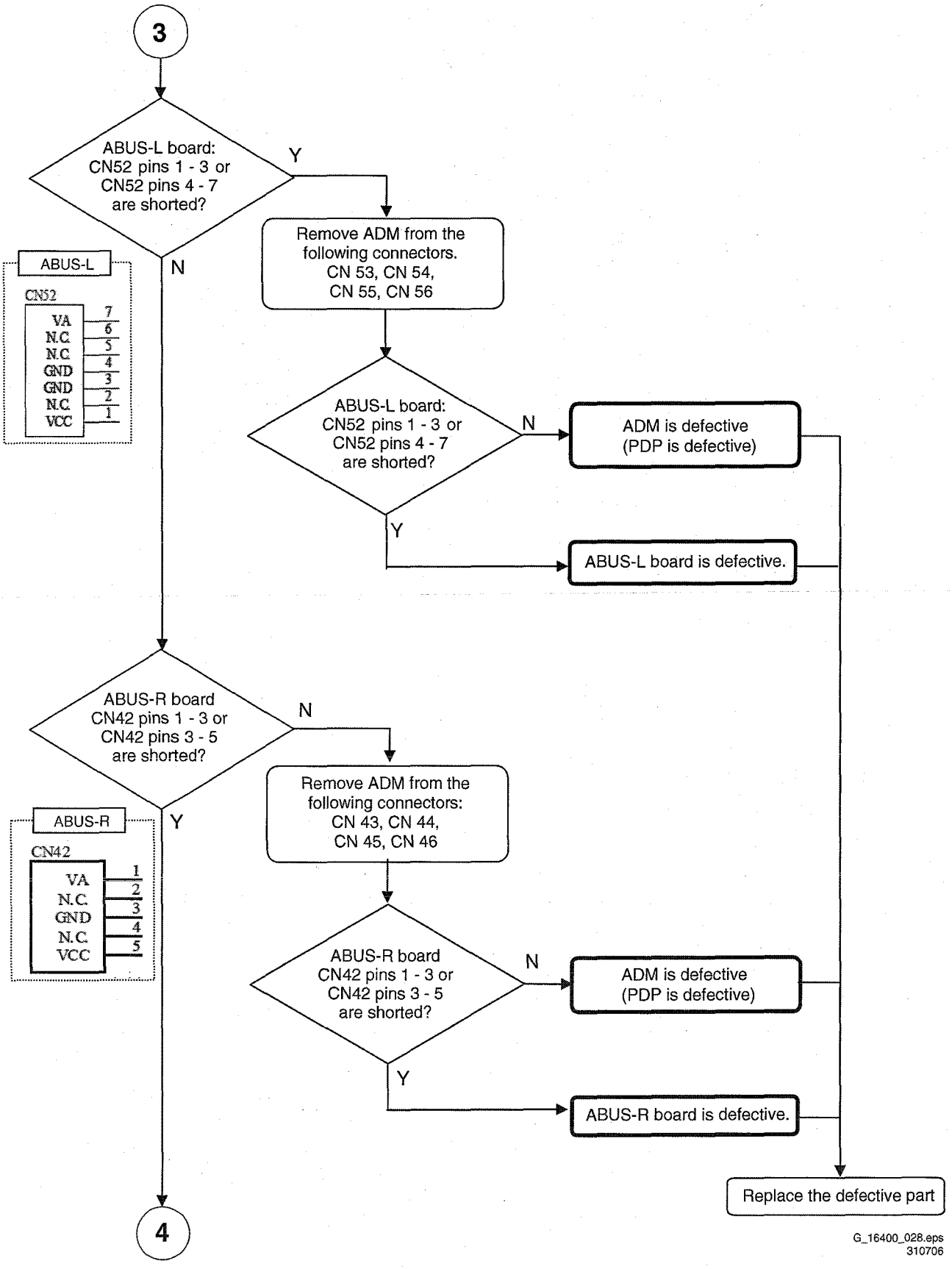

Figure 5-7 Short circuit check on boards and power supply lines (2/3)

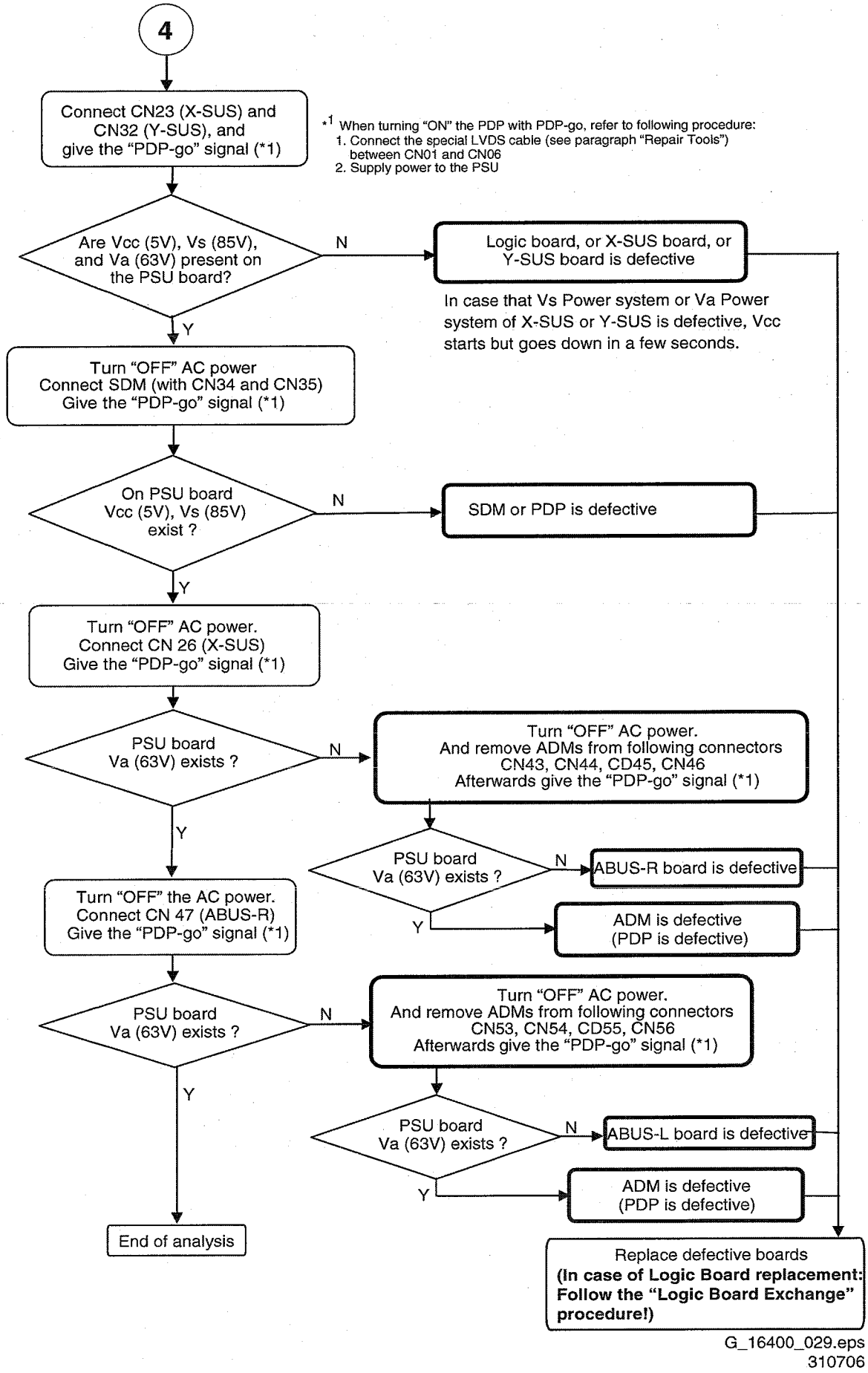
4
Connect CN23 (X-SUS) and CN32 (Y-SUS), and give the "PDP-go" signal (*1)
*1 When turning "ON" the PDP with PDP-go, refer to following procedure:
1. Connect the special LVDS cable (see paragraph "Repair Tools") between CN01 and CN06
2. Supply power to the PSU
Are Vcc (5V), Vs (85V), and Va (63V) present on the PSU board?
N
Logic board, or X-SUS board, or Y-SUS board is defective
In case that Vs Power system or Va Power system of X-SUS or Y-SUS is defective, Vcc starts but goes down in a few seconds.
Y
Turn "OFF" AC power
Connect SDM (with CN34 and CN35)
Give the "PDP-go" signal (*1)
On PSU board Vcc (5V), Vs (85V) exist ?
N
SDM or PDP is defective
Y
Turn "OFF" AC power.
Connect CN 26 (X-SUS)
Give the "PDP-go" signal (*1)
PSU board Va (63V) exists ?
N
Turn "OFF" AC power.
And remove ADMs from following connectors
CN43, CN44, CD45, CN46
Afterwards give the "PDP-go" signal (*1)
Y
PSU board Va (63V) exists ?
N
ABUS-R board is defective
Y
ADM is defective (PDP is defective)
Turn "OFF" the AC power.
Connect CN 47 (ABUS-R)
Give the "PDP-go" signal (*1)
PSU board Va (63V) exists ?
N
Turn "OFF" AC power.
And remove ADMs from following connectors
CN53, CN54, CD55, CN56
Afterwards give the "PDP-go" signal (*1)
Y
PSU board Va (63V) exists ?
N
ABUS-L board is defective
Y
ADM is defective (PDP is defective)
End of analysis
Replace defective boards
(In case of Logic Board replacement: Follow the "Logic Board Exchange" procedure!)
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Figure 5-8 Short circuit check on boards and power supply lines (3/3)

"Vertical line/Vertical bar" problem analysis procedure

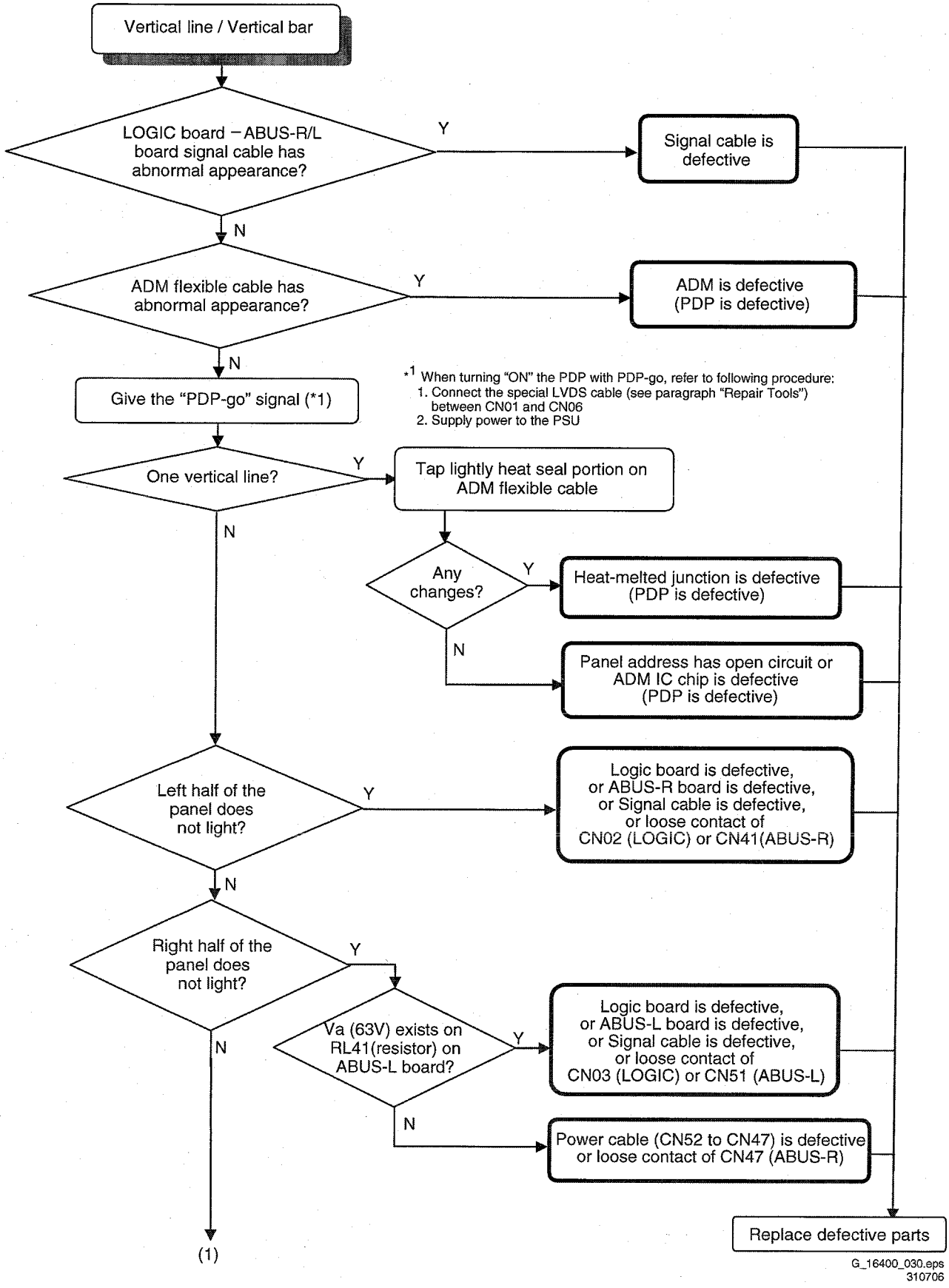
Vertical line / Vertical bar
LOGIC board – ABUS-R/L board signal cable has abnormal appearance?
Y
Signal cable is defective
N
ADM flexible cable has abnormal appearance?
Y
ADM is defective (PDP is defective)
N
Give the "PDP-go" signal (*1)
*1 When turning "ON" the PDP with PDP-go, refer to following procedure:
1. Connect the special LVDS cable (see paragraph "Repair Tools") between CN01 and CN06
2. Supply power to the PSU
One vertical line?
Y
Tap lightly heat seal portion on ADM flexible cable
N
Any changes?
Y
Heat-melted junction is defective (PDP is defective)
N
Panel address has open circuit or ADM IC chip is defective (PDP is defective)
Left half of the panel does not light?
Y
Logic board is defective, or ABUS-R board is defective, or Signal cable is defective, or loose contact of CN02 (LOGIC) or CN41(ABUS-R)
N
Right half of the panel does not light?
Y
Va (63V) exists on RL41(resistor) on ABUS-L board?
Y
Logic board is defective, or ABUS-L board is defective, or Signal cable is defective, or loose contact of CN03 (LOGIC) or CN51 (ABUS-L)
N
Power cable (CN52 to CN47) is defective or loose contact of CN47 (ABUS-R)
N
(1)
Replace defective parts
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Figure 5-9 Vertical line / vertical bar problem analysis procedure (1/3)

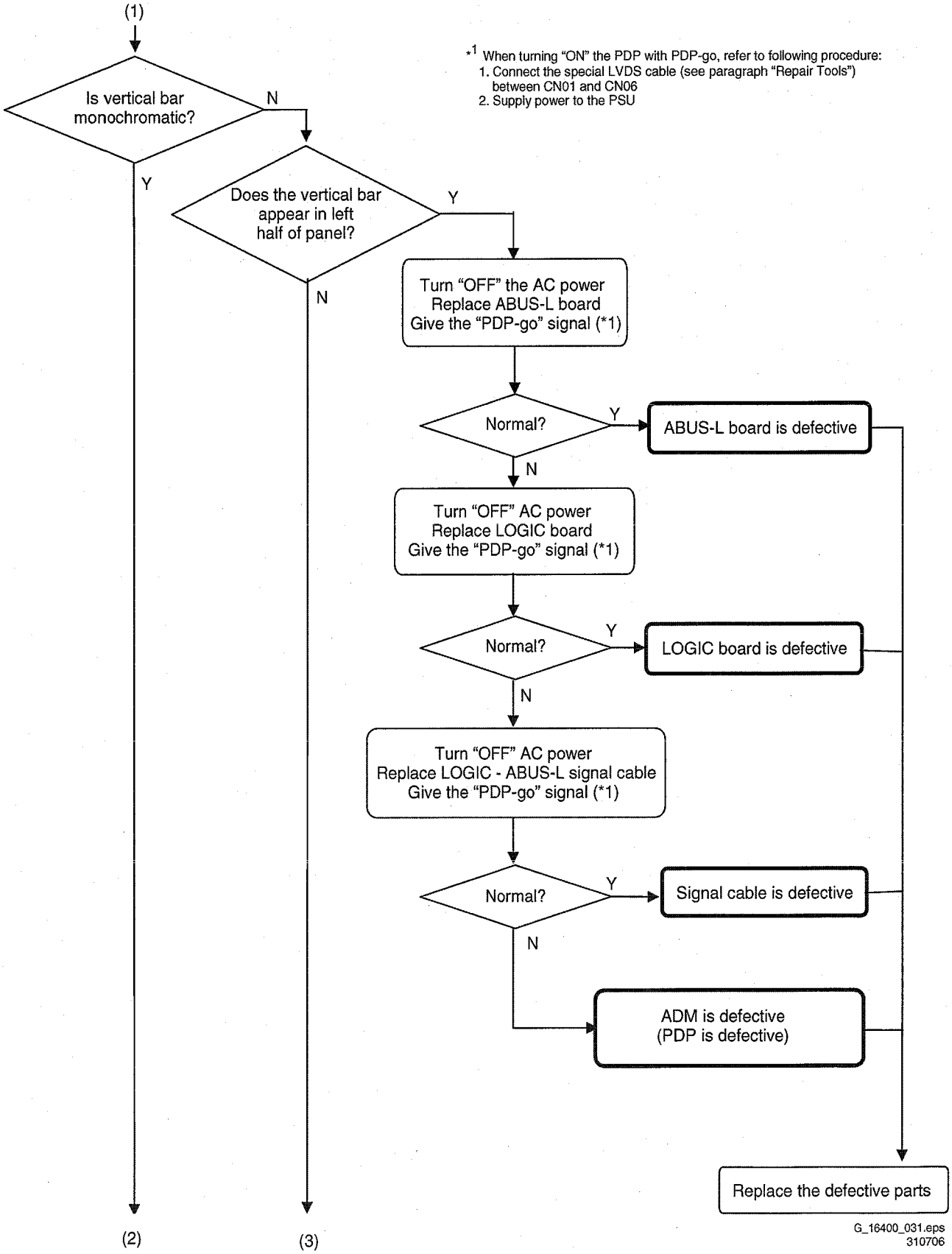

Figure 5-10 Vertical line / vertical bar problem analysis procedure (2/3)

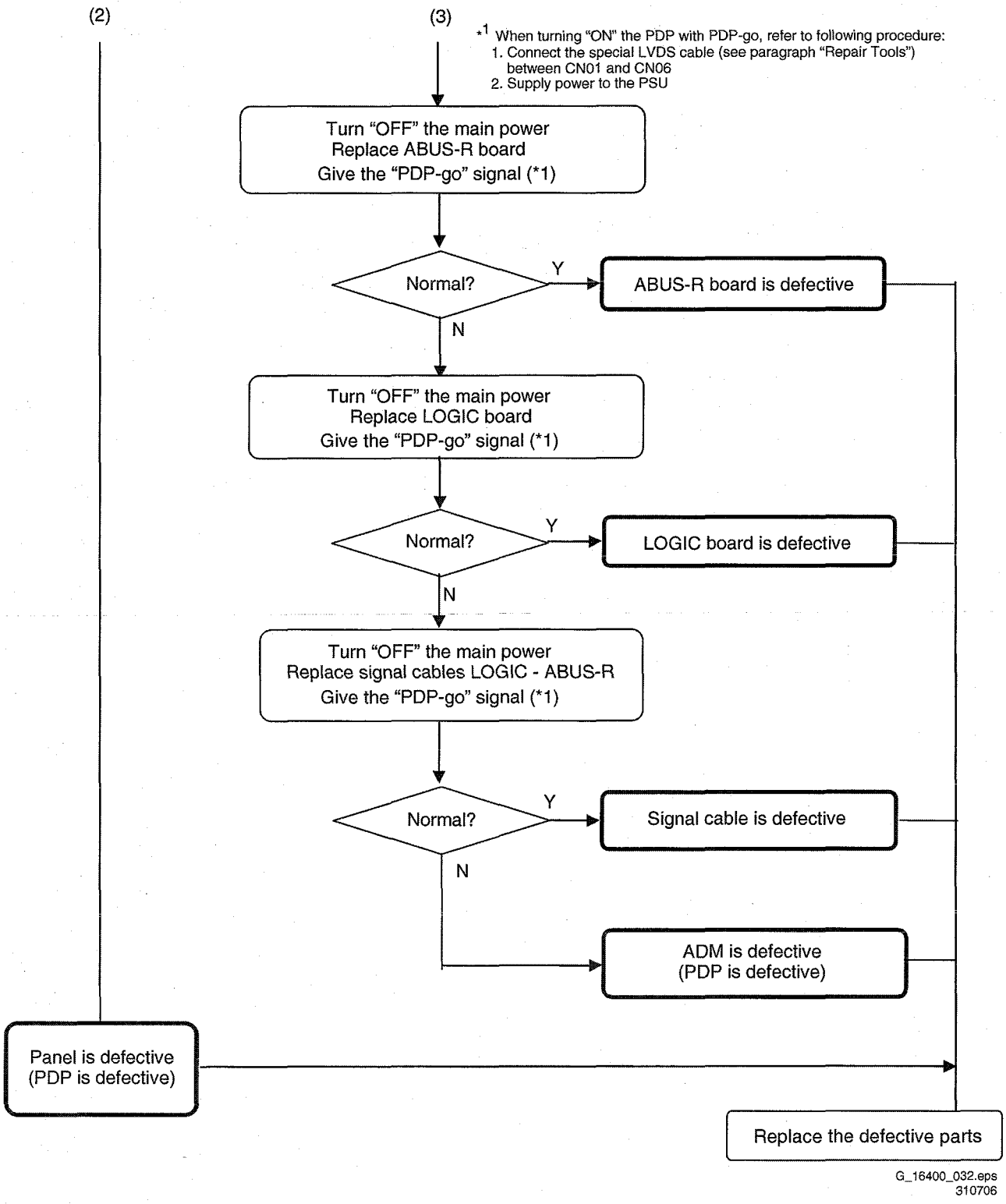

Figure 5-11 Vertical line / vertical bar problem analysis procedure (3/3)

"Horizontal bar" problem analysis procedure

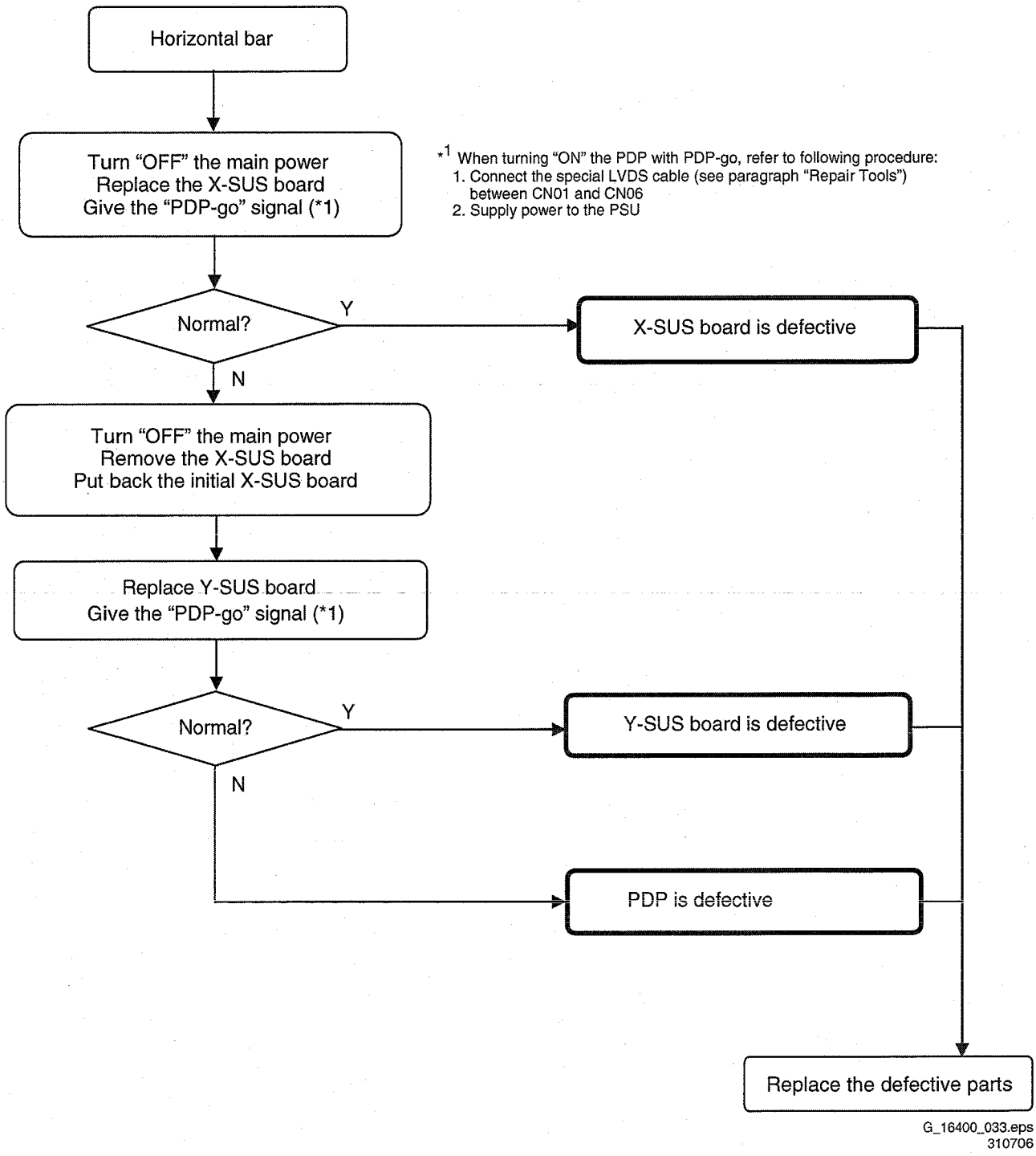

Figure 5-12 Horizontal line problem analysis procedure

Remark: Do not interchange boards between different PDPs, this might damage your PDP

Logic Board Exchange (1)

1. Copy NVM Data from defective Logic Board

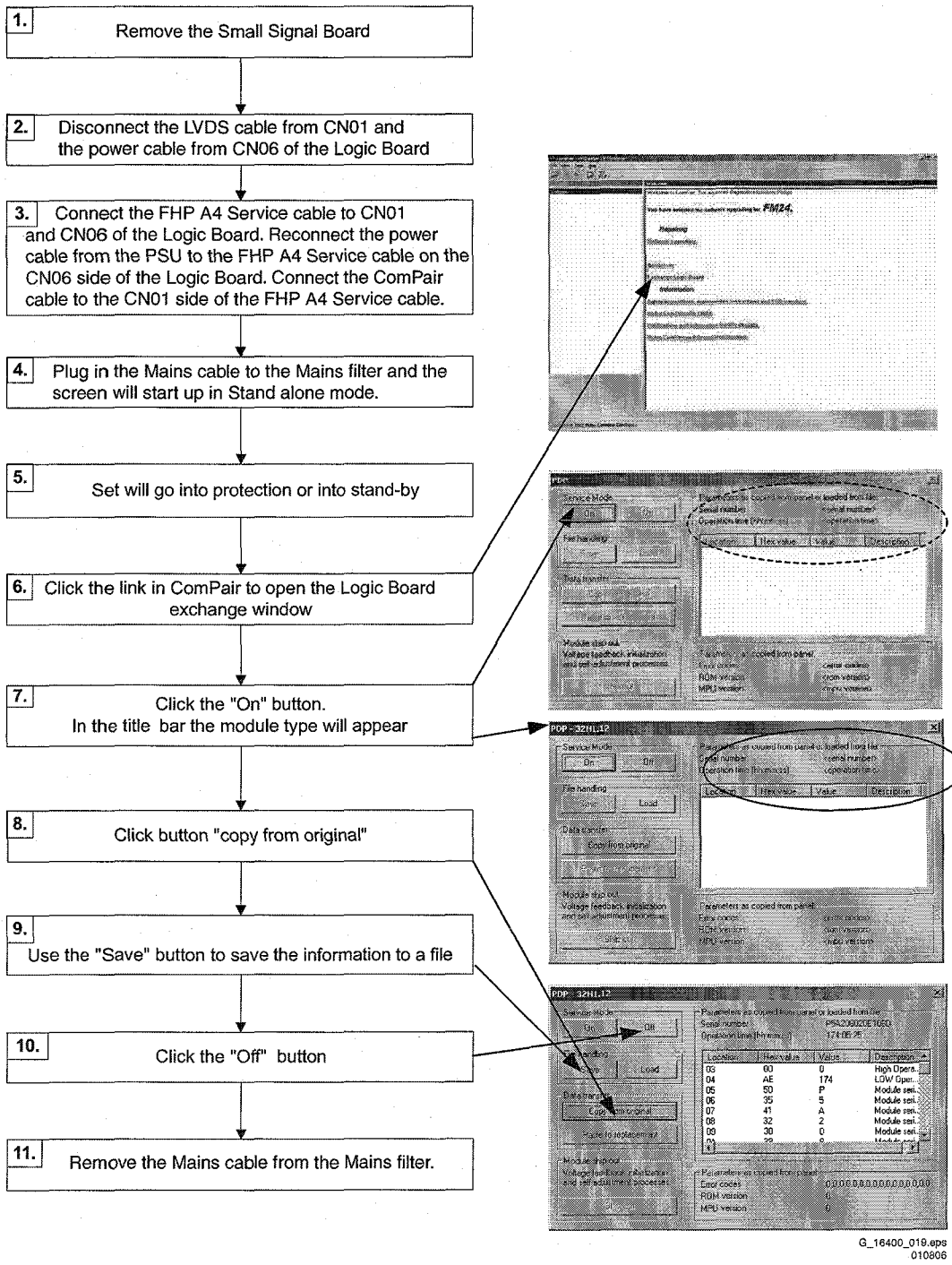
1. Remove the Small Signal Board
2. Disconnect the LVDS cable from CN01 and the power cable from CN06 of the Logic Board
3. Connect the FHP A4 Service cable to CN01 and CN06 of the Logic Board. Reconnect the power cable from the PSU to the FHP A4 Service cable on the CN06 side of the Logic Board. Connect the ComPair cable to the CN01 side of the FHP A4 Service cable.
4. Plug in the Mains cable to the Mains filter and the screen will start up in Stand alone mode.
5. Set will go into protection or into stand-by
6. Click the link in ComPair to open the Logic Board exchange window
7. Click the "On" button. In the title bar the module type will appear
8. Click button "copy from original"
9. Use the "Save" button to save the information to a file
10. Click the "Off" button
11. Remove the Mains cable from the Mains filter.
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Figure 5-13 Logic Board Exchange (1/2)

1. Remove the SSB. Now you can reach the cable going to connector CN01 on the Logic Board.
2. Unplug the LVDS cable from the SSB at connector CN01. Also unplug the power cable at CN06.
3. Connect the FHP A4 service cable to CN01 and CN06. Connect the ComPair I2C cable to the CN01 side of the service cable, and the power cable to the CN06 side of it.
4. Plug in the mains cable. The display starts up in stand-alone mode.
5. Click the link in ComPair to open the Logic Board exchange window.
6. Click the 'On' button. In the title bar the module type will appear: 42A4, or something similar.
7. Click button 'Copy from original'
8. The data is read from the EEPROM on the logic board and displayed in the list.
9. Use the 'Save' button to save the information to a file. This is optional, but better safe than sorry!
   Note: If you close the window without saving, all settings

will be lost. If you intend to close this window before replacing the board, you should save the settings so you can load them later.

10. Click the 'Off' button.
11. Switch off the set and replace the Logic Board with another one.

Logic Board Exchange (2)

2. Write NVM Data to the new Logic Board

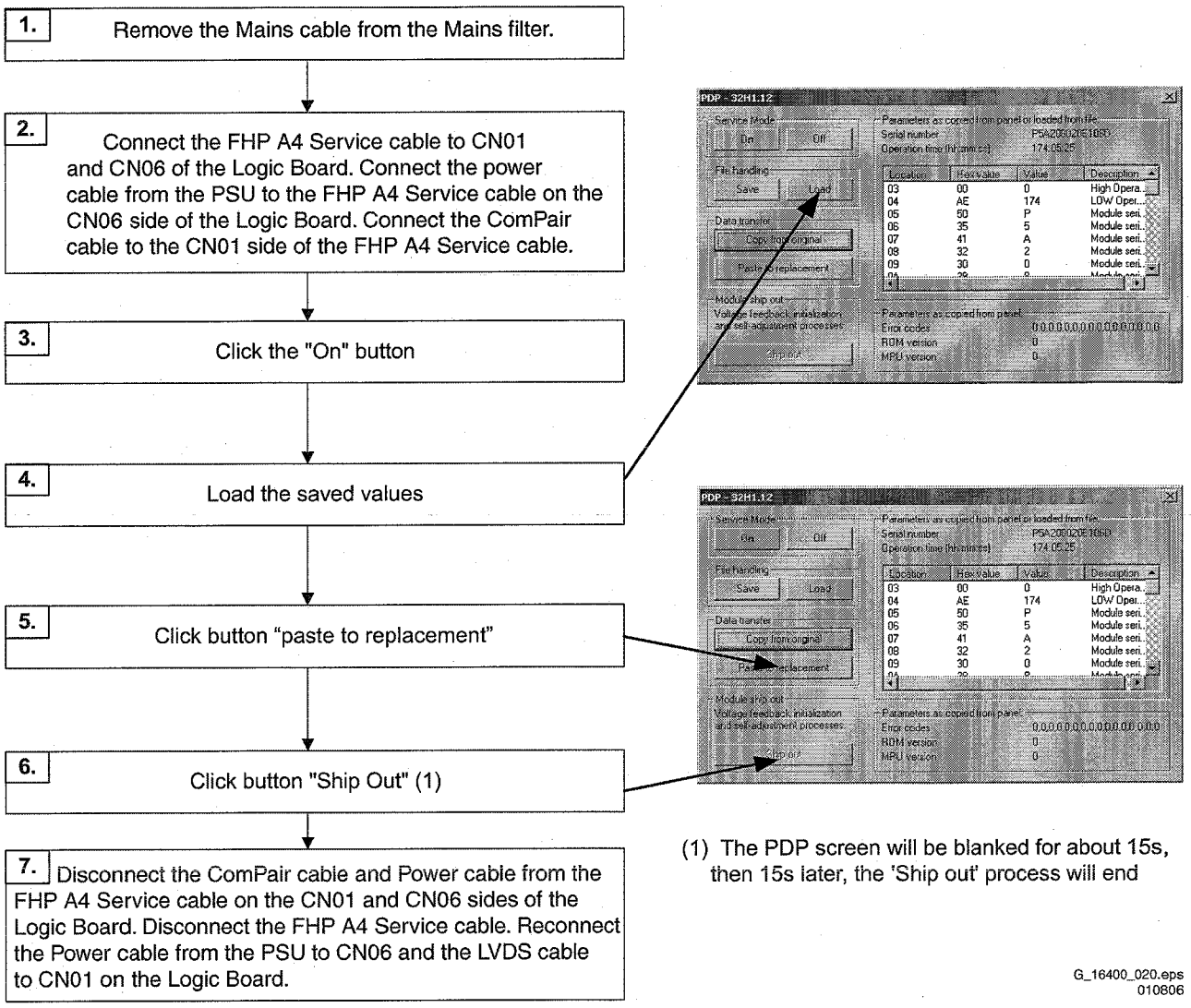
1.
Remove the Mains cable from the Mains filter.
2.
Connect the FHP A4 Service cable to CN01 and CN06 of the Logic Board. Connect the power cable from the PSU to the FHP A4 Service cable on the CN06 side of the Logic Board. Connect the ComPair cable to the CN01 side of the FHP A4 Service cable.
3.
Click the "On" button
4.
Load the saved values
5.
Click button "paste to replacement"
6.
Click button "Ship Out" (1)
7.
Disconnect the ComPair cable and Power cable from the FHP A4 Service cable on the CN01 and CN06 sides of the Logic Board. Disconnect the FHP A4 Service cable. Reconnect the Power cable from the PSU to CN06 and the LVDS cable to CN01 on the Logic Board.
(1) The PDP screen will be blanked for about 15s, then 15s later, the 'Ship out' process will end
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Figure 5-14 Logic Board Exchange (2/2)

1. Switch off the set and replace the Logic Board by another one. Now connect the service cable to connectors CN01 and CN06. Connect the power cable to the CN06 side of the service cable, and the ComPair cable to the CN01 side.
2. Restart the display with the new board.
3. Click the 'On' button.
4. The module type will again appear in the title bar. This may be different now from step 6 on the previous page, because now another Logic Board is used. If you closed the window after step 9 and did save the settings you should load them now. Use the 'Load' button to do so.
5. Click button 'Paste to replacement'. The settings previously copied from the old board are now written to the new board. If successful the button 'Ship out' will be enabled.
6. Click button 'Ship out'.
7. Now a process of voltage feedback initialization and self-adjustment starts. This will take a few seconds. When ready you can switch off the display.
8. Disconnect ComPair and remove the service cable, plug in the power cable at CN06 and the original LVDS cable at CN01.

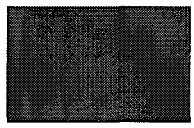
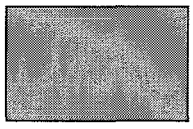
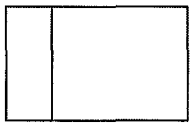
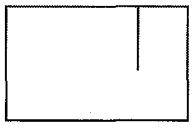
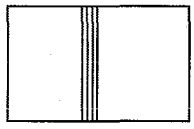
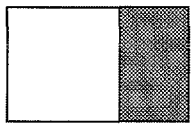
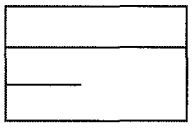
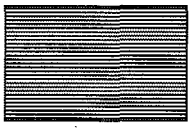
NO	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
1	Entire screen does not light.	After momentarily going on, the screen becomes black immediately or after a few seconds (main power is turned off.)		X-SUS Y-SUS PSU Panel chassis LOGIC ABUSL ABUSR	Refer to "Entire screen does not light"
2		Screen lights dimly even on the back screen.		LOGIC	Replace the LOGIC board, following the "Logic Board Exchange" procedure
3	Vertical line	Single vertical line (of different color)		Panel chassis LOGIC	Refer to "Vertical line/bar"
4		Vertical line from the middle of effective scan area (vertical line of different color)		Panel chassis	Replace panel chassis
5	Vertical bar	Bar width of 1/7 of horizontal size or in multiples of 1/7, is displayed. Abnormal display		Panel chassis ABUS-L ABUS-R LOGIC Above boards are connected.	Refer to "Vertical line/bar"
6		Bar width of 3/7 or 4/7 of the screen width, is displayed. Abnormal display (vertical line of different color)		ABUS-L ABUS-R LOGIC Above boards are connected.	
7	Horizontal line	Single horizontal line (no light) or single horizontal line does not light among the effective scanning area. Single horizontal line does not light.		Panel chassis X-SUS Y-SUS ABUS-L ABUS-R	Replace panel chassis
8		Every other line (no light) in entire screen		X-SUS Y-SUS ABUS-L ABUS-R	Replace X-SUS, Y-SUS

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Figure 5-15 Fault symptom overview (1/2)

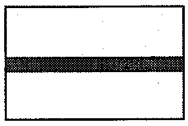
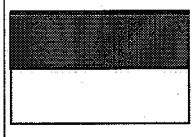
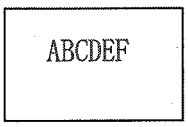
NO	Fault contents	Fault status		Suspected fault location	Analysis procedure and measure
9	Horizontal bar	Bar width of 1/8 or multiples of 1/8 of the screen height, is displayed. Abnormal (screen does not light)		Panel chassis	Replace panel chassis
10		Bar width of 1/2 of the screen height. Abnormal display (screen does not light)		Panel chassis Y-SUS X-SUS Above boards are connected.	Refer to "Horizontal bar"
11	Image sticking (Image retention)	Fixed display contents are always displayed.		Panel chassis	Perform all white heat run. After judgement, replace panel chassis
12	Twinkle	The entire screen momentarily becomes brighter or darker.		Poor connector contact	
13	Flicker	The entire screen flickers continuously.		Poor connector contact (CN2,3,21,31)	Connector / cable re-connection or cable exchange
14	Luminance is abnormal	Screen is too dark or too bright. (Out of specifications)			
15	Chrominance is abnormal	Colors cannot be displayed correctly.		LOGIC board	Replace Logic board, following the "Logic Board Exchange" procedure
16	Sync is disturbed				
17	Picture distorted				
18	Steps of gradation are skipped	Luminance linearity is poor.			
19	Abnormal sound			PSU X-SUS Y-SUS (Core is broken, or transformer is abnormal.)	Locate cause of abnormality from listening and viewing. Replace the cause of problem.
20	Control on external communication is abnormal	Contrast, color temperature adjustment and Y cannot be changed.		LOGIC board	Replace Logic board, following the "Logic Board Exchange" procedure

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Figure 5-16 Fault symptom overview (2/2)

5.5 Defect Description Form

This form must be used by the workshops for warranty claims:

DDF FLAT TV (panels & boards) version 1.1 — Date last modified: 08/03/2005

To be filled in by WORKSHOP / WORK CENTER

Country:	Philips	Type nr./Model nr. set	
Customer Account nr.:	LCD & Plasma	Serial nr. set	
Job sheet nr.:	DEFECT DESCRIPTION FORM	Type nr. display	
		Serial nr. display	
		Part nr display (12nc)	
		Return number	0170 _ _ _ _ _ _

GENERAL REPAIR DATA

Condition

- ❒ Constantly
- ❒ Intermittently
- ❒ After a while
- ❒ In a hot environment
- ❒ In a cold environment
- ❒ Other : .....

Symptom(s)

- ❒ No backlight
- ❒ No picture
- ❒ Picture too bright
- ❒ Shading / smearing on picture
- ❒ Only partial picture
- ❒ Unstabel picture
- ❒ Flickering / flashing picture
- ❒ Lines across/down image
- ❒ Inactive row(s)
- ❒ Inactive column(s)
- ❒ Missing colour(s)
- ❒ Other: .....

PANEL REPAIR

Pixel Defect(s):

- ❒ Dark dots
- ❒ Bright dots

Qty of dots :
.....
.....

Mark Defect(s)

Picture

Insert picture or mark defect !

Symptoms Out of warranty

Following defect symptoms are out of warranty:

- Broken glass
- Scratch(es) on display
- Number of dark/bright pixels within spec.
- Burn in (only for Plasma TV)

These symptoms are not claimable.

BOARD REPAIR

For Plasma TV repair only

	Spare Part Nr. New Board	Barcode Nr. Defect Board	Barcode Nr. Replaced Board
1.			
2.			
3.			
4.			

To be filled in by EUROSERVICE	RMA number:	Date of receipt:

Note 1: The defective LCD-panel / PDP needs to be returned in the same packaging as the new part was send. If not the warranty claim will be rejected.

Note 2: Please fill out this form completely and correctly, otherwise Euroservice is unable to fulfil the repair request!

Owner: PHILIPS CE EUROSERVICE — DE10WEG

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Figure 5-17 Defect Description Form (DDF)

6. Block Diagrams, Test point Overview, and Wave Forms

6.1 Block Diagrams

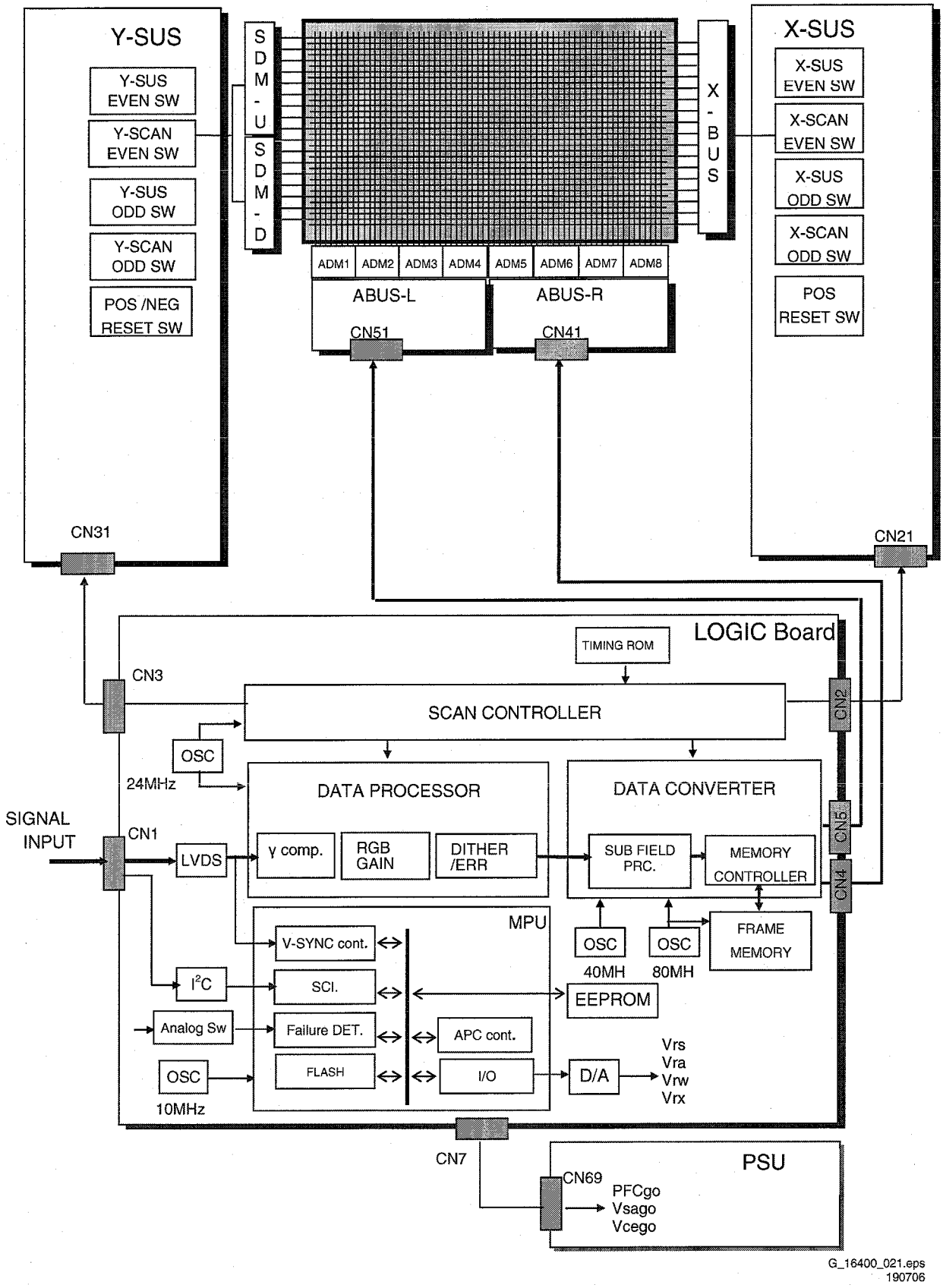

Figure 6-1 Signal block diagram

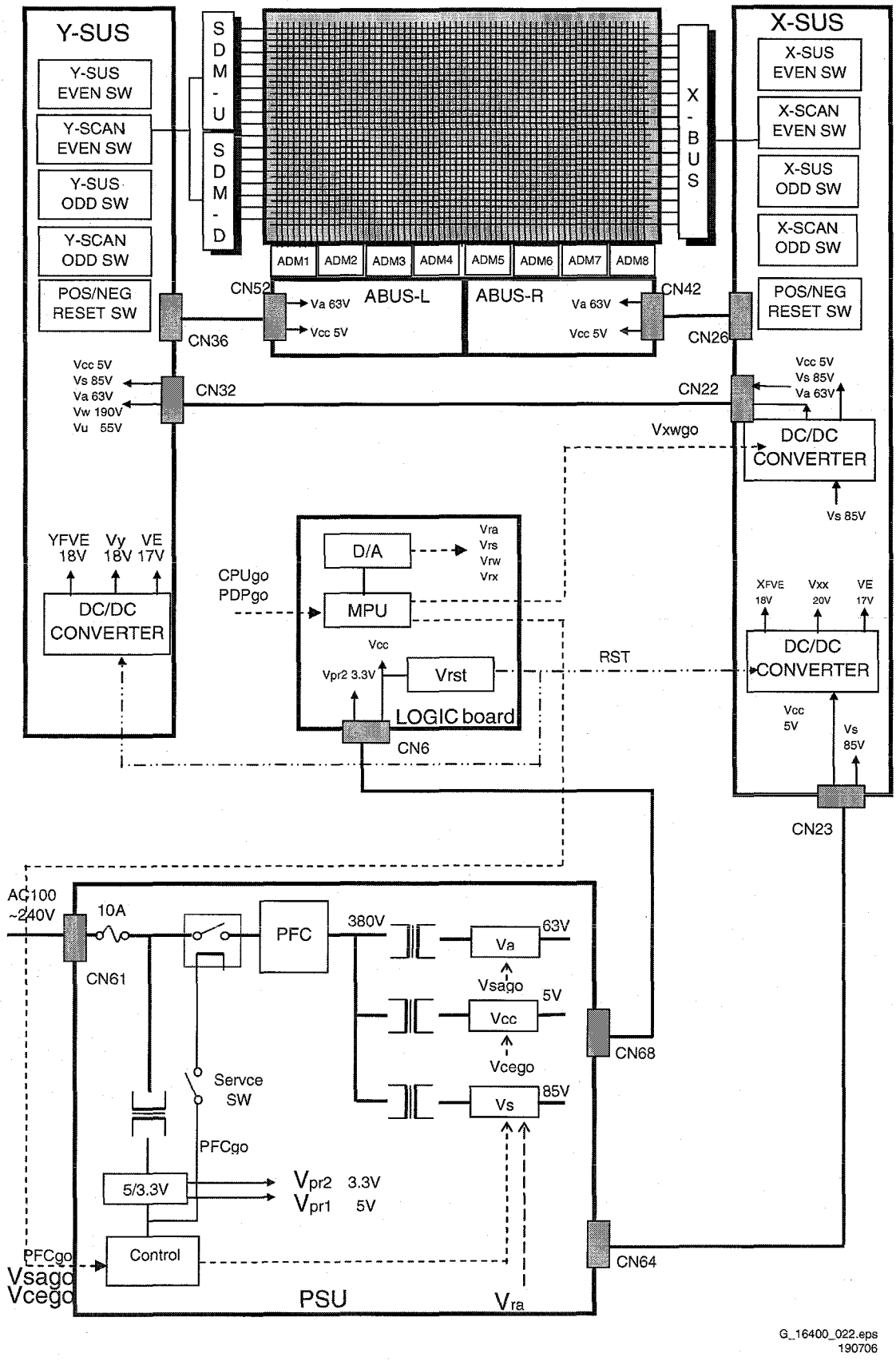

Figure 6-2 Power block diagram

6.2 Test Points

Not available.

6.3 Wave Forms

Not available.

7. Circuit Diagrams and PWB Layouts

Not applicable.

8. Alignments

8.1 Voltage Setting Procedure

On the back of the PDP, in the top right hand corner, you find the Voltage Setting label:

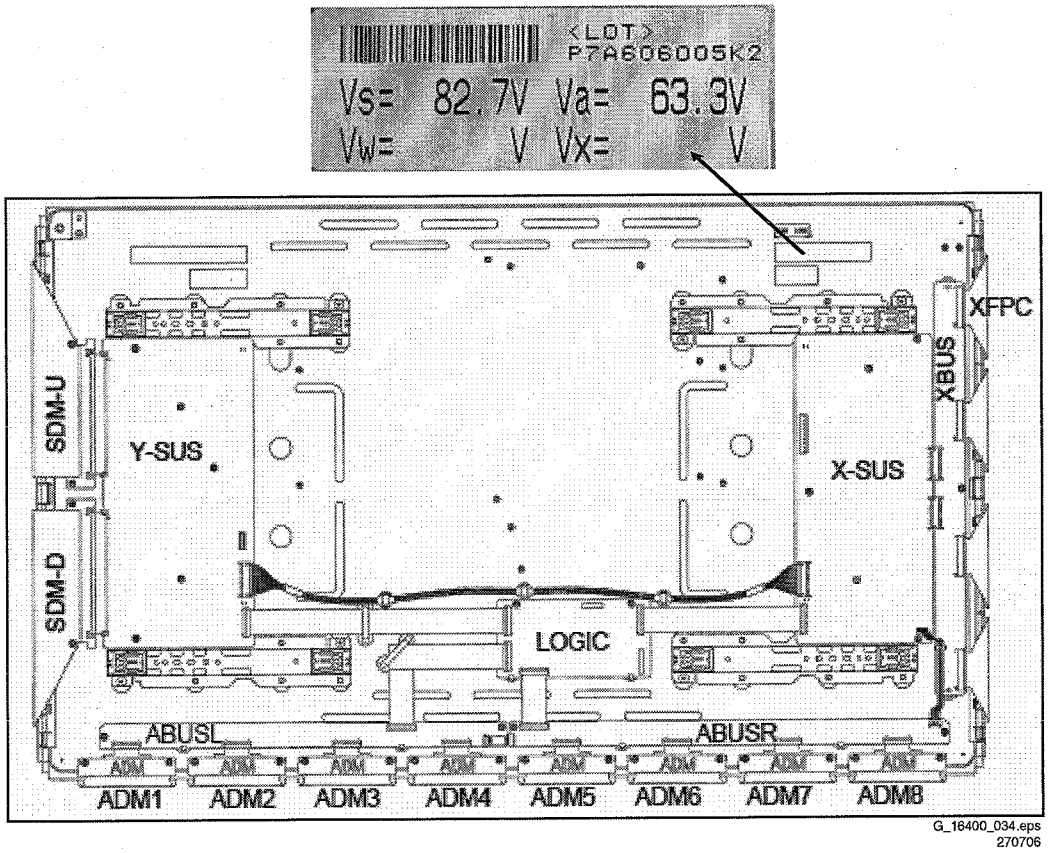

Figure 8-1 Voltage setting label

This Voltage Setting label shows the following messages:

Table 8-1

Item	Adjustment items	Measurement point	Adjustment value (conditions)
1	Vs voltage adjustment	Pins 8-9-10 of CN23 on the X-SUS board	Voltage setting label indication value* ± 1%
2	Va voltage adjustment	Pin 1 of CN23 on the X-SUS board	Voltage setting label indication value* ± 1%

If the voltage adjustments Vs and Va on the Power Supply Unit must be performed, depends on the version of the Power Supply Unit.

9. Circuit Descriptions and Abbreviation List

9.1 Board Function Description

9.1.1 Logic Board Function

Data Processor
- Gamma adjustment (1 / 2.2 / 2.4 / 2.6 / 2.8).
- NTSC/EBU format (Colour matrix) Switch.
- RGB gain Control (White balance adjustment, amplitude limitation).
- Error diffusion technology (grey scale adjustment).
- Dither (grey scale adjustment).
- Burn-in pattern generation.

Data Converter
- Quasi out-line adjustment (luminous pattern control).

Scan Controller
- Address driver control signal generator (ADM).
- Scan driver control signal generator (SDM).
- X/Y sustain control signal generator.

Waveform ROM
- Waveform pattern for drive / timing memory.

MPU
- Synchronous detection.
- System control.
- Driving voltage (Va, Vs, Vr, Vw) adjustment.
- Abnormal watch (breakdown detection) / abnormal processing.
- I_s (sustain) current control (sustain pulse control).
- I_a (address) current control (sub-field control).
- External communication control.
- Flash memory (firmware).

EEPROM
- Control parameter memory.
- Counts operating time (number of hours).
- Abnormal status memory (16 places).

9.1.2 Function of X-SUS Board

DC/DC power supply block
- Vcc (+5V) -> Ve (+17V) / XFve (+18V, floating).

X Switching Block
- Switching during address period.
- Switching during sustain period.
- Switching during reset period.

Current Detector Block
- I_sx (sustain) current detection.
- I_ax (address) current detection.

9.1.3 Function of Y-SUS Board

DC/DC Power Supply Block
- Vcc (+5V) -> Ve (+17V) / YFve (+ 18V, floating)
- Vs (+85V) -> Vw (+185V)

Switching Block
- Switching during address period.
- Switching during sustain period.
- Switching during reset period.

Current Detector Block
- I_sy (sustain) current detection.
- I_sp (SDM) current detection.

9.1.4 Function of ADM Board

Address Driver Module
- Supplies voltage Va to the glass plate.

9.1.5 Function of SDM Board

Scan Driver Module
- Supplies voltage Vs to the glass plate.

9.1.6 Function of PSU Board

Stand-by Power Supply Block
- AC100-240: +5V & +3V3 Stand-by.

PFC Block (AD/DC Power Supply Block)
- AC100-240: +390V.

AD/DC Power Supply Block
- +380V, Vcc (+5V), Vs (+80V), Va (+60V).

Current Detection Block
- I_a (address) current detection.

Abnormal Voltage Monitoring
- Vs excess voltage monitoring.
- Va excess voltage monitoring.

9.2 Differences between the Versions A1, A2, A3, and A4

9.2.1 Specifications

Table 9-1 Specifications

Item	42A1	42A2	42A3	42A4
Dimensions (mm)	994 x 585 x 66	994 x 585 x 66	994 x 587 x 66	994 x 587 x 66
Weight (kg)	16	16	16	16
Resolution (h x v)	1024 x 1024	1024 x 1024	1024 x 1024	1024 x 1080
Brightness (cd/m^2) (display load 1%, standard)	1,100	1,200	1,400	1,400
Contrast (dark room)	1000 : 1	1000 : 1	3000 : 1	3000 : 1

9.2.2 Layouts

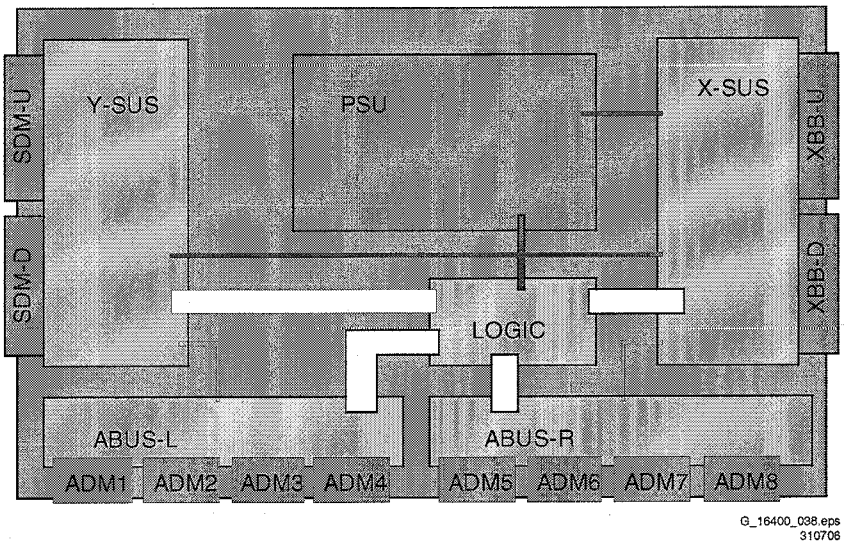

Figure 9-1 Layout 42A1

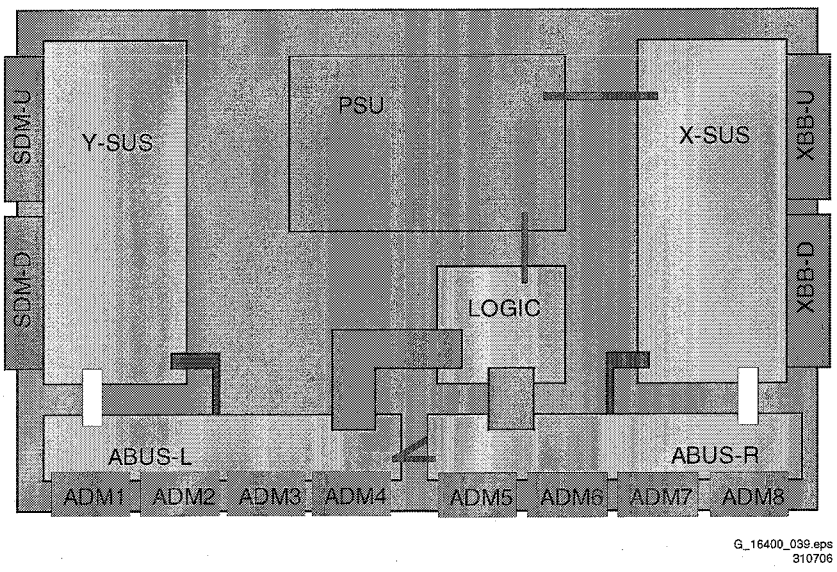

Figure 9-2 Layout 42A2

Differences with respect to 42A1:

- The signal cable arrangement has changed.
- The power cable arrangement has changed.
- An 80-pin FPC cable is used between Logic Board and ABUS-L and ABUS-R.
- The signal cable from the PSU to the Logic Board is standardised.
- The power cable from the PSU to the Logic Board is standardised.

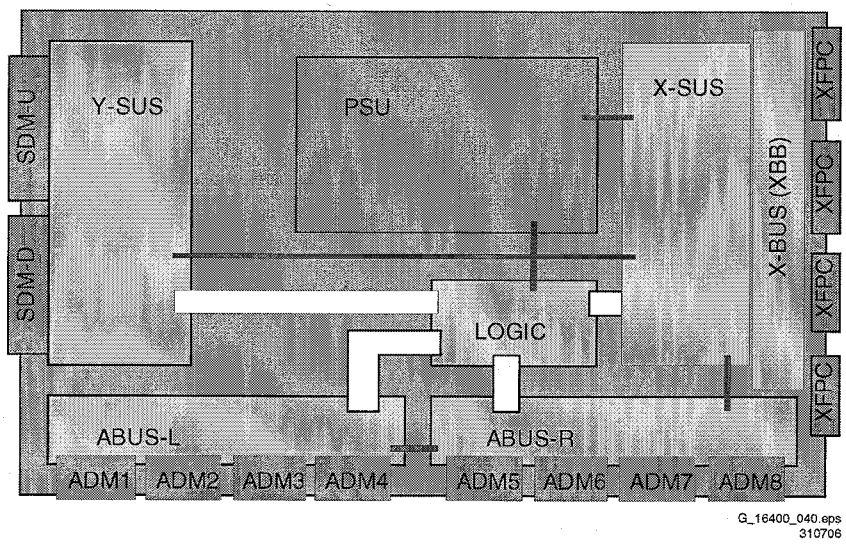

Figure 9-3 Layout 42A3

Differences with respect to 42A2:

- The signal cable arrangement has changed (now similar to 42A1).
- The power cable arrangement has changed (now similar to 42A1).
- The XBB has been replaced by XFPC and X-BUS.
- A new connector type is used on ABUS-L, ABUS-R, and X-BUS.

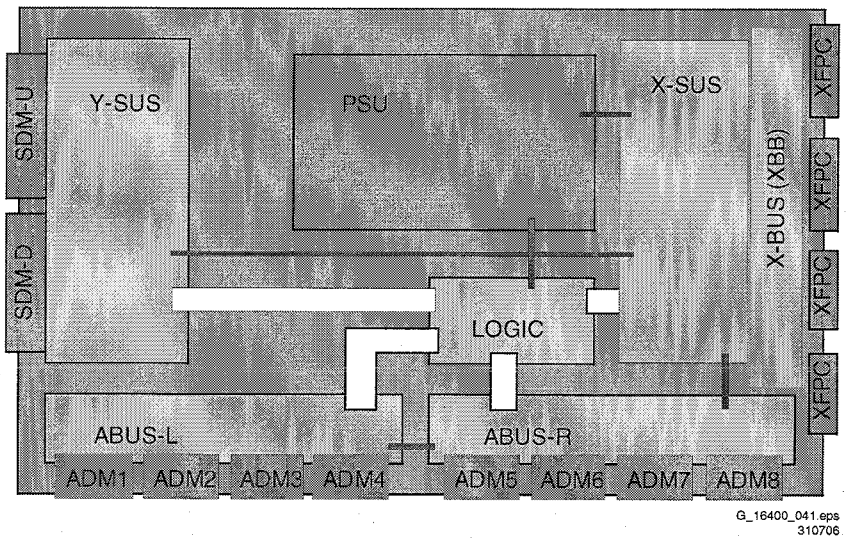

Figure 9-4 Layout 42A4

Differences with respect to 42A3:

- There are no differences in cable arrangements with respect to 42A3.

9.3 List of abbreviations

ADM	Address driver module
Burn-in rack	Test equipment of the shelf test in which the PDP unit is left to stand in drive condition
CPU	The unit for controlling the circuit operation
DOXE	The control voltage for even-numbered lines in the X direction
DOXO	The control voltage for odd-numbered lines in the X direction
DOYSD	Used in the drive voltage in the Y direction (down)
DOYSU	Used in the drive voltage in the Y direction (up)
External power ON	Running the external powers (Vcc, Va, Vs) on the designated voltage. Unless otherwise specified
External power OFF	Making the external powers (Vcc, Va, Vs) to stop their operation completely. Unless otherwise specified
Flexible cable	The cable to connect the electric circuit to the panel
Flicker	Continuous switching between bright and dark views by the PDP itself
Gradation	Shading of the display colour
OPUMP	The name of a circuit where the current from X/Y-SUS is returned
Oscilloscope	A device that allows the flow and strength of the running current to be visually checked and measured
Panel	The indication part of the plasma display panel (PDP)
Panel voltage	The voltage required operating the PDP normally
Parts	Each PC board and parts mounted in the PC boards
PDP	Plasma display panel abbreviated
Probe	A cable with contact finger that can transfer the status of the electric circuit to be measured to an oscilloscope
Protection cover	A cover made of aluminium to protect the PDP entirely during test
ROM	Memory that stores the drive sequence and other data
SCAVIO	Scaler Control Audio Video Output & Input
SDM	Scan driver module
SUS	X-SUS or Y-SUS
Tapping	Light impact
Unit of COM	The unit of circuits connected to the panel with flexible cable (YCOM UP/DOWN, X-BUS UP/DOWN, address sections, the unit of PC boards in ACOM 1 to 5).
Va	The power supply at 60 V, which is used to write data on the panel
Vcc	The power supply at 5 V, which is used to operate the logic section mainly
Vs	The power supply ranging from 127 V to 180 V, which is used to maintain display data. In addition, this can serve as the primary side for the secondary voltage (Vw, -Vy, Vsc)
Solid white	A condition when the screen display is entirely white
X-SUS	The name of the circuit that controls the panel operation in the X direction
YCOM	The circuit used to output a panel Y line selection signal and the voltage of a display data keep signal
YCOMDV	The name of the panel drives voltage signal output from YCOM UP/DOWN section
Y-SUS	The name of the circuit that controls the panel operation in the Y direction

10. Spare Parts List

For spare parts list see chapter 5

11. Revision List

This manual is a supplement to the following service manuals:

Table 11-1 Overview of chassis and manuals, covered by this manual

Display type	Model CTN	Chassis	12NC Manual
42" A4	42PF5331/10	LC4.41E AA	3122 785 16240
	42PF5411/10	LC4.41E AA	3122 785 16240
	42PF9531/79	BJ3.0A PA	3122 785 15980
	42PF9531/93	BJ3.0A PA	3122 785 15980
	42PF9531/98	BJ3.0A PA	3122 785 15980
	42PF9631D/10	BJ3.0E PA	3122 785 15960

11.1 Service Manual xxxx xxx xxxx.0

First release.